ANNUAL COMPLETION REPORT

MIGRATORY GAME BIRDS

2011

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And
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2011 JOB COMPLETION REPORT

Species: Migratory Game Birds

Wyoming Portions of the Central and Pacific Flyways

Period Covered: September 1, 2010 - August 31, 2011

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INTRODUCTION

The Migratory Game Bird Section has operated with reduced staffing since the mid-1990s. Accordingly, surveys and other job duties have been prioritized and in some cases, suspended. During the report period, 1.5 FTEs were assigned to the section.

In cooperation with the U.S. Fish and Wildlife Service, the Migratory Game Bird Section conducted the following annual surveys to derive population indices for management: September crane survey, mid-winter waterfowl survey, and mourning dove call-count survey. The Migratory Game Bird Section remains strongly involved in the Central and Pacific Flyway management efforts, including development and revision of management plans for the various migratory game bird populations and annual season setting. These processes require participation on the Flyway Technical Committees at the December/January, March and July Flyway meetings.

The Migratory Game Bird Section is directly or indirectly involved in the management of all migratory game birds in the two Flyways. In addition, substantial personnel time has been devoted to wetlands and habitat management over the past year.

During the report period a decision was made to lower the priority of banding effort in Wyoming, resulting in no banding of migratory game birds. The Migratory Game Bird Section provided financial support to the Central Flyway pre-season duck banding effort in North Dakota.

The maintenance and evaluation of over 800 goose nesting structures remains a priority throughout Wyoming. However, reductions in personnel and funding have forced the Department to reevaluate its ability to bed and maintain the structures and to eliminate less effective structures where possible.

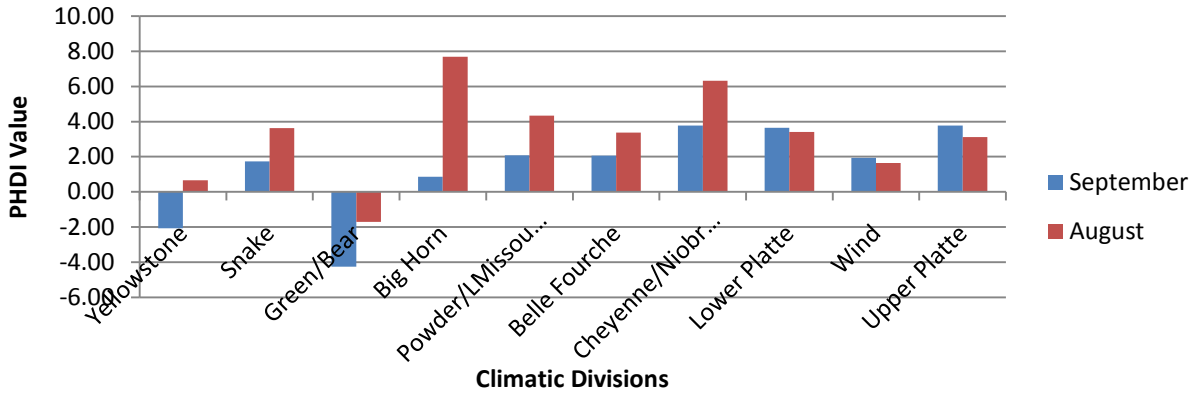
The Bump-Sullivan managed goose hunt was initiated in 1993 to alleviate competition among hunters. The hunt was not operated from the 2002/03 through the 2009/10 dark goose-hunting season because Bump-Sullivan Reservoir was dry. The hunt was reinstated during the 2010/11 season.

The Section participated in several migratory game bird habitat projects across the state. Local involvement was maintained in the Intermountain West (IWJV) and Northern Great Plains (NGPJV) Joint Ventures. The migratory game bird biologist is a member of the NGPJV Technical Committee. The migratory game bird biologist and Alpine Staff Biologist are also participants on the Wyoming Bird Habitat Conservation Partnership, which serves both joint ventures in the state.

WEATHER/HABITAT CONDITIONS

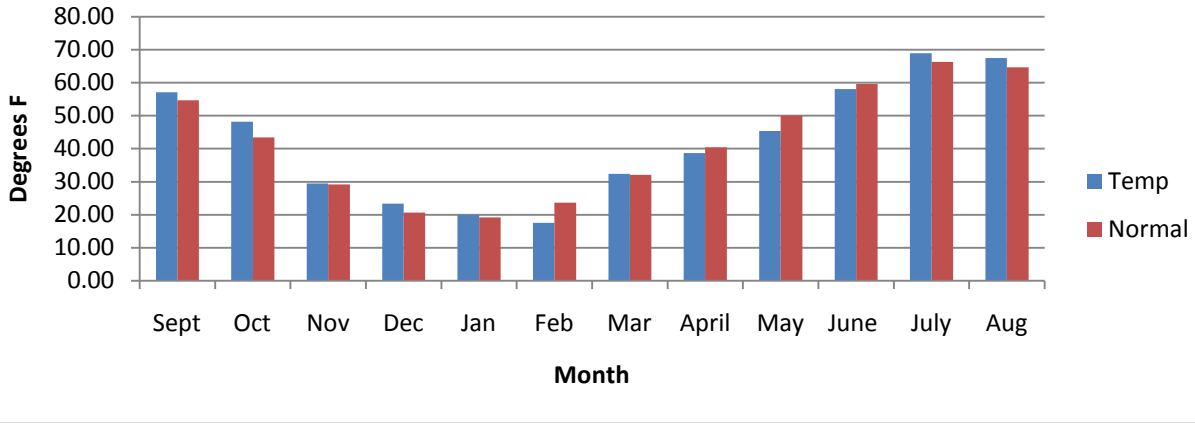
During the report period, September 2010 through August 2011, the monthly Palmer Hydrological Drought Index improved in 7 of the 10 climatic divisions in the state (Figure 1). In August 2011, only the Green/Bear River basin (mild to moderate) was classified as being in drought. Water conditions improved markedly in streams and wetlands throughout most of Wyoming.

Figure 1. September 2010 and August 2011 Palmer Hydrological Drought Indices for the 10 climatic divisions in Wyoming.

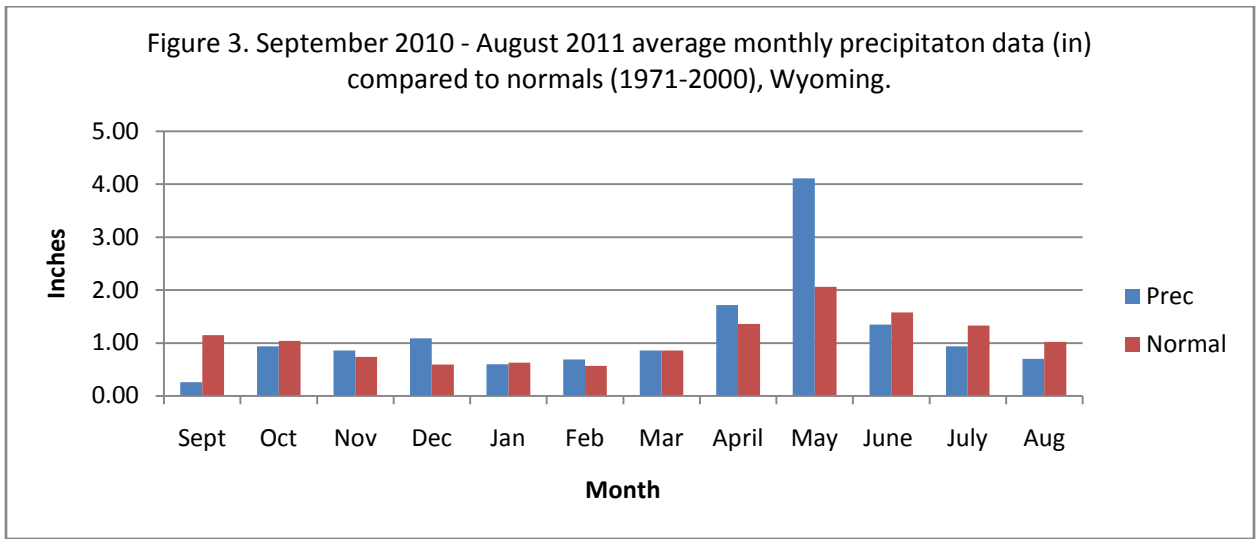


Average monthly temperatures for Wyoming were above normal (1971-2000 average) during 7 months of the report period (Figure 2). The 12-month average of 42.2^{o} F was slightly above normal (42.00^{o} F).

Figure 2. September 2010-August 2011 average monthly temperature data (F) compared to normals (1971-2000), Wyoming.



Average monthly precipitation in Wyoming was somewhat below normal (1971-2000 average) during 6 months of the report period (Figure 3). However, the 12-month total of 14.12 inches was above normal (12.92 in.).



During the fall of 2010, increased numbers of local and migrating waterfowl were observed throughout Wyoming. In eastern Wyoming warmer than normal temperatures in December were accompanied by several high precipitation events. The November through January period was wetter than normal. Lower elevation water bodies in eastern Wyoming froze in December. In western Wyoming, winter conditions were difficult for migratory game birds after late November. Duck and Canada goose populations were near or slightly above normal across the state, with some localized exceptions.

During spring, 2011 brood habitat improved across most of the state. Upland habitats also improved as a long-term hydrologic drought continued to moderate. However, below normal temperatures and above normal precipitation during April, May, and June may have impacted reproductive success of migratory game birds. Few mourning doves appeared to remain in southeastern Wyoming during the nesting season.

The computation of the June Surface Water Supply Index (SWSI) includes reservoir storage, if applicable, plus the forecast runoff. All drainages had adequate or surplus water supplies in 2011. As of June 1, reservoir storage was 92% of average for the entire state, although storage levels varied widely at individual reservoirs.

Near normal recharge of springs and streams is improving water distribution throughout Wyoming. However, uncontrolled grazing in and adjacent to mesic areas during dry years has negatively impacted the long-term health of these plant communities.

2011 Waterfowl Breeding Habitat Conditions

The traditional and eastern survey areas in the Canada and the U.S. prairies were characterized by average to above-average moisture and a normal winter and spring. An exception was the west-central portion of the traditional survey area, which received below-average moisture. The May pond estimate (wetland basins with standing water in Prairie and Parkland Canada and north central U.S.) was 8.1 million – 22% above the 2010 estimate and 62% above the long-term average. Breeding conditions across the Canadian prairies greatly improved relative to 2010 when conditions were excellent in portions of southern Alberta, Saskatchewan and Manitoba. In 2011, the area considered in excellent condition expanded and included a region along the Alberta and Saskatchewan border that was in poor condition the last two years. Residual water remained in the Parklands, which were classified as poor to good.

Habitat conditions were excellent in the surveyed portion of the U.S. prairies. The May pond estimate was 3.2 million, similar to last year's estimate and 102% above the long-term average. Habitat conditions in the western Dakotas and eastern Montana improved to good to excellent in 2011. Further, the abundant moisture and delayed farming operations in north-central U.S. and southern Canadian prairies likely benefited early-nesting waterfowl.

The nesting season in the bush regions of the survey area (Alaska, Yukon, Northwest Territories, northern Manitoba, northern Saskatchewan, and western Ontario) was delayed by a late spring break-up. However, a period of warm, fair weather just prior to the survey greatly accelerated ice-out. Habitats improved from 2010 across most of northern Saskatchewan and Manitoba as a result of average to above-average summer and fall precipitation in 2010. Habitat conditions in Alaska and the Northwest Territories were classified as good. Dry conditions in the boreal forest of Alberta persisted and habitat conditions were rated fair to poor. The dry conditions contributed to numerous forest fires during the survey.

In 2011, snowmelt timing was average to slightly below average throughout most of the important goose breeding areas. Conditions in the central Arctic, especially near Queen Maud Gulf, improved relative to last year's very late spring, so improved production of snow, Ross's and white-fronted geese is expected. Conditions throughout Alaska and northwestern Canada were very good. Indices of wetland abundance in the Canadian and U.S. prairies were generally excellent, and were notably improved in Canada. This likely increased nesting and brood rearing success of temperate-nesting Canada geese this year. However, flooding along many river systems may have destroyed some nests. Primary abundance indices decreased for 7 goose populations and increased for 10 goose populations compared to 2010 levels. Primary abundance indices decreased for western tundra swans and remained unchanged for eastern tundra swans compared to 2010 levels. The forecast production of geese and swans in North America is regionally variable for 2011, but production by most populations will be similar this year compared to 2010.

Although habitat improved across much of Wyoming, cool and wet weather and/or high or rising water levels during spring and early summer may have had some negative impact on migratory game bird production. The extent of the impact is unknown. However, the higher precipitation levels of recent years will produce favorable habitat conditions and status of migratory game bird populations will improve in the long term.

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DUCKS AND MERGANSERS

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING GROUND SURVEY

The duck breeding ground survey historically flown by the WGFD was suspended after the 1999 survey.

Forecasts of fall duck flights are based on continental trends in duck breeding populations and water conditions on breeding grounds in traditional survey areas.

The continental population of breeding ducks increased 11% from 2010 to 2011 and was 34% above the long-term average (Tables 1 and 3). The breeding population of mallards in the traditional survey area increased 9% from the 2010 level and remained 22% above the long-term average (Tables 2 and 3).

Short and long-term changes in breeding populations of 10 major duck species are shown in Table 3. In 2011, the counts of eight species increased by comparison to 2010 levels. Breeding populations of American wigeon and green-winged teal declined from 2010 to 2011.

The 2011 fall flight from the f mid-continent population of mallards was forecast at11.9 million, a 1.6 million increase from 2010. The mid-continent mallard population is composed of mallards from the traditional survey area, which was revised in 2008 to exclude Alaska mallards, and also includes mallards from Michigan, Minnesota, and Wisconsin. These indices were based on mid-continent mallard population models revised in 2002, and the 2008 updated model weights, and therefore differ from those previously published.

2010 DUCK HARVEST INFORMATION

In 2010, the Department estimated 44,451 ducks were harvested in Wyoming (Table 4). The 2010 harvest was less than recorded in 2008 and 2009, and 47% below the Department's objective. During the last decade, harvest trends in Wyoming generally did not match the continental trends duck populations, likely due to severe drought that prevailed in Wyoming throughout this time frame. Harvest estimates derived from the USFWS's Harvest Information Program (HIP) are consistently dissimilar from Department estimates (Table 7). The Service determined there may be issues with recovery of HIP registrations from some categories of license venders.

In the Central Flyway portion of Wyoming, 35,641 ducks were harvested in 2010 (Table 5). This harvest was 6% less than recorded in 2009 and 34% below the Department's objective for the Central Flyway. Wyoming waterfowl/wetland management areas are depicted in Figure 4.

In the Pacific Flyway portion of Wyoming, 8,810 ducks were harvested in 2010 (Table 6). This was 34% below the 2009 harvest of 13,653 ducks and remains 70% below the Department's objective for Pacific Flyway duck harvest.

The mallard was the prevalent species harvested by Wyoming hunters (Table 7). American wigeon, teal, gadwall, and goldeneyes were also numerically important species in the harvest. Presently, HIP estimates do not distinguish duck species according to Flyway in any of the Rocky Mountain States. Estimating state-specific sales of duck stamps is also becoming increasingly problematic for the USFWS. Flyway-specific estimates of the total duck harvest are provided in Table 8.

WINTER SURVEYS

The number of ducks counted in the Central Flyway portion of the state during early January was 17% below the long-term average (Table 9). The number of ducks counted in the Pacific Flyway portion of the state was 2% above the long-term average.

DUCK BANDING

The Department supported a cooperative duck banding effort by the Central Flyway states in 2010. A single crew banded ducks in western North Dakota.

RECOMMENDATIONS

1. Continue to support objectives of the Adaptive Harvest Management program and the North American Waterfowl Management Plan.

2. Work with Department personnel, joint ventures, and other interests to identify and develop wetland projects designed to increase local duck production, hold more birds in the fall, and provide additional harvest opportunity. Increase public access within key waterfowl harvest areas statewide.

3. Support acquisition and development of the Cokeville Meadows National Wildlife Refuge. Provide biological information when requested and make recommendations to the U.S. Fish and Wildlife Service regarding the development and eventual management of refuge lands.

4. Support duck and goose banding efforts in both Flyways.

5. Review and critique federal policies and regulations affecting waterfowl management in Wyoming.

6. Continue to support and participate in the Flyway system of waterfowl management.

Table 1. Duck breeding population estimates (in thousands), for regions in the traditonal survey area, 2010 and 2011.

SURVEY AREA	2010	2011	PERCENT CHANGE
TRADITIONAL AREAS			
Alaska - Yukon Territory - Old Crow Flats	5,556	3,756	-32%
C. & N. Alberta - N.E. British Columbia - Northwest Territories	8,717	7,095	-19%
N. Saskatchewan - N. Manitoba - W. Ontario	2,149	2,439	13%
S. Alberta	2,641	4,372	66%
S. Saskatchewan	6,839	10,681	56%
S. Manitoba	1,104	1,554	41%
Montana and western Dakotas	1,977	3,135	59%
Eastern Dakotas	11,910	12,523	5%
TOTAL[a]	40,893	45,555	11%

[a] Includes the 10 species in Table 3 plus American black duck, ring-necked duck, goldeneyes, bufflehead, and ruddy duck. Excludes eiders, long-tailed duck, wood duck, scoters, and mergansers.
Source: USFWS. Trends in duck breeding populations, 1955-2011.

Table 2. Mallard breeding population estimates (in thousands) for regions in the traditional survey area, 2010 and 2011.

SURVEY AREA	2010	2011	PERCENT CHANGE
TRADITIONAL AREAS			
Alaska - Yukon Territories - Old Crow Flats	606	416	-31%
C. & N. Alberta - N.E. British Columbia - Northwest Territories	1,423	975	-31%
N. Saskatchewan - N. Manitoba - W. Ontario	801	828	3%
S. Alberta	598	939	57%
S. Saskatchewan	1,699	2,093	23%
S. Manitoba	351	521	48%
Montana & western Dakotas	533	837	57%
Eastern Dakotas	2,420	2,574	6%
TOTAL	8,431	9,183	9%

Source: USFWS. Trends in duck breeding populations, 1955-2011.

Table 3. Changes in breeding population estimates (in thousands) for 10 species of ducks in the traditional survey area.

SPECIES	2010	2011	PERCENT CHANGE BETWEEN 2010 AND 2011	LTA	PERCENT CHANGE BETWEEN 2011 AND THE 1955 - 10 AVERAGE
Mallard	8,430	9,183	9%	7,545	22%
Gadwall	2,977	3,257	9%	1,808	80%
American wigeon	2,425	2,084	-14%	2,604	-20%
Green-winged teal	3,476	2,900	-17%	1,975	47%
Blue-winged teal	6,329	8,948	41%	4,687	91%
Northern shoveler	4,057	4,641	14%	2,343	98%
Northern pintail	3,509	4,429	26%	4,031	10%
Redhead	1,064	1,356	27%	659	106%
Canvasback	585	692	18%	571	21%
Scaup (Greater and lesser combined)	4,244	4,319	2%	5,058	-15%
TOTAL	37,096	41,809	13%	31,281	34%

Source: USFWS. Trends in duck breeding populations, 1955-2011.

Table 4. Wyoming duck harvest and hunter activity by Flyway, 2008-2010.

	MEAN 2004-08	2008	2009	2010	OBJECTIVE
CENTRAL FLYWAY					
No. Hunters	5,182	4,544	4,622	4,347	9,216
No. Rec. Days	29,580	26,716	24,950	23,945	45,235
Harvest	45,169	41,047	37,765	35,641	54,394
PACIFIC FLYWAY					
No. Hunters	1,635	1,536	1,482	1,236	3,970
No. Rec. Days	7,706	6,615	7,160	6,180	19,148
Harvest	14,902	12,113	13,653	8,810	29,294
TOTALS					
No. Hunters	6,817	6,080	6,104	5,583	13,186
No. Rec. Days	37,286	33,331	32,110	30,125	64,383
Harvest	60,071	53,160	51,418	44,451	83,688

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2005-2011.

Table 5. Duck harvest and hunter activity data for waterfowl management areas in the Central Flyway portion of Wyoming.

MANAGEMENT AREA			MEAN 2004-08	2008	2009	2010	OBJECTIVE
Missouri/Cheyenne/ Little Powder Rivers	1A	No. Hunters	314	384	193	298	398
		No. Rec. Days	1,207	1,528	1,142	1,345	1,791
		Harvest	1,906	2,313	2,266	2,558	1,393
Tongue/Little Big Horn/Powder Rivers	1B	No. Hunters	298	273	285	229	547
		No. Rec. Days	1,620	1,134	1,473	966	2,461
		Harvest	2,227	1,940	1,954	1,800	3,063
Central North Platte River	1C	No. Hunters	887	706	846	798	1,603
		No. Rec. Days	5,929	5,465	5,417	4,669	8,015
		Harvest	8,793	7,967	7,526	6,061	7,214
Lower North Platte River	2A	No. Hunters	1,203	940	913	934	2,050
		No. Rec. Days	7,149	5,943	4,568	5,756	9,225
		Harvest	10,354	7,128	5,840	6,833	9,225
South Platte River	2B	No. Hunters	110	72	109	115	193
		No. Rec. Days	338	211	521	607	965
		Harvest	744	286	839	1,251	869
Upper North Platte River	3A	No. Hunters	387	333	450	415	1,075
		No. Rec. Days	1,452	1,511	1,994	1,751	4,838
		Harvest	2,423	2,515	2,646	2,527	5,160
Big Horn River	4A	No. Hunters	1,382	1,329	1,327	1,045	2,200
		No. Rec. Days	8,757	8,086	7,812	6,401	12,000
		Harvest	14,349	14,821	12,525	10,236	20,000
Yellowstone River	4B	No. Hunters	38	73	12	10	100
		No. Rec. Days	200	286	48	18	400
		Harvest	276	498	124	97	500
Wind River	4C	No. Hunters	541	425	442	477	950
		No. Rec. Days	2,870	2,543	1,870	2,373	5,000
		Harvest	4,002	3,568	3,761	4,217	6,200
Sweetwater River	4D	No. Hunters	22	9	45	26	100
		No. Rec. Days	58	9	105	59	540
		Harvest	95	11	284	61	770
TOTALS		No. Hunters	5,181	4,544	4,622	4,347	9,216
		No. Rec. Days	29,581	26,716	24,950	23,945	45,235
		Harvest	45,170	41,047	37,765	35,641	54,394

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2005-2011.

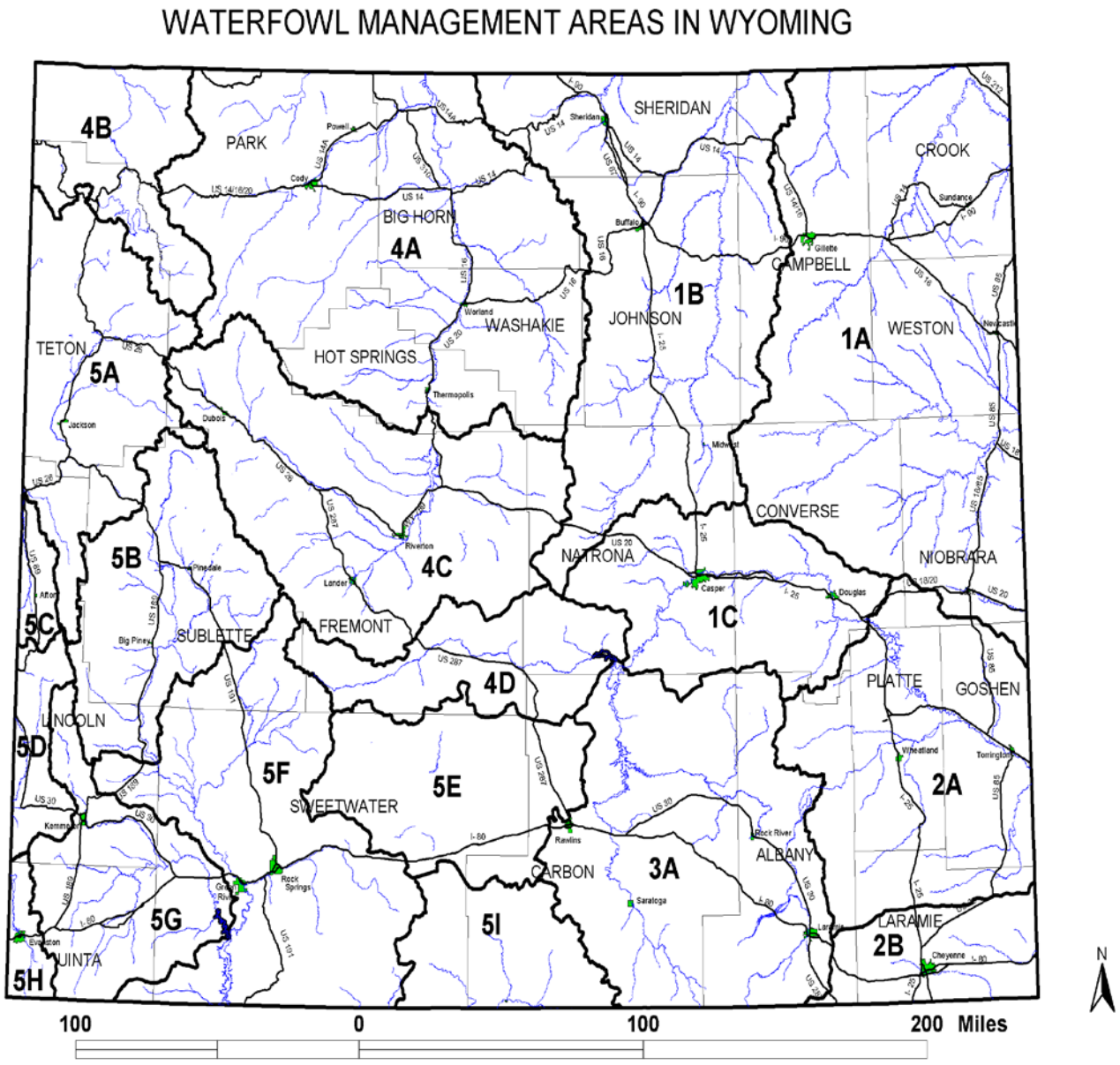

Figure 4. Waterfowl/wetland management areas in Wyoming.

Table 6. Duck harvest and hunter activity data for waterfowl management areas in the Pacific Flyway portion of Wyoming.

MANAGEMENT AREA			MEAN 2004-08	2008	2009	2010	OBJECTIVE
Snake River	5A	No. Hunters	205	129	144	125	440
		No. Rec. Days	1,163	471	809	870	2,200
		Harvest	1,922	840	868	1,140	2,800
Upper Green River Basin	5B	No. Hunters	246	238	258	104	500
		No. Rec. Days	1,025	1,010	1,007	294	2,000
		Harvest	1,940	1,329	1,636	503	3,000
Salt River	5C	No. Hunters	255	135	150	120	750
		No. Rec. Days	1,538	631	914	811	4,000
		Harvest	3,119	778	1,963	1,024	7,500
Lower Bear River	5D	No. Hunters	101	134	91	111	450
		No. Rec. Days	540	558	513	648	2,048
		Harvest	944	1,126	1,240	1,140	3,294
Great Divide Basin	5E	No. Hunters	24	28	36	20	100
		No. Rec. Days	57	64	68	54	400
		Harvest	97	164	88	100	600
Lower Green River Basin	5F	No. Hunters	397	438	408	368	700
		No. Rec. Days	1,955	1,952	1,960	1,998	3,000
		Harvest	3,906	3,790	3,732	2,641	4,200
Ham's/Black's Fork	5G	No. Hunters	241	239	209	194	600
		No. Rec. Days	839	1,223	786	747	3,000
		Harvest	1,979	3,223	1,641	1,169	3,600
Upper Bear River	5H	No. Hunters	121	163	163	146	330
		No. Rec. Days	485	634	1,062	620	1,900
		Harvest	804	726	2,385	941	3,500
Little Snake River	5I	No. Hunters	45	32	23	48	100
		No. Rec. Days	104	72	41	138	600
		Harvest	191	137	100	152	800
TOTALS		No. Hunters	1,635	1,536	1,482	1,236	3,970
		No. Rec. Days	7,706	6,615	7,160	6,180	19,148
		Harvest	14,902	12,113	13,653	8,810	29,294

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2005-2011.

Table 7. HIP estimates of duck harvest and hunter activity in Wyoming[a] during the 2008-2010 hunting seasons.

DUCK SPECIES COMPOSITION	2008	% OF BAG	2009	% OF BAG	2010	% OF BAG
Mallard	22,255	50.01	25,784	71.57	22,075	61.27
Domestic mallard	0	0.00	0	0.00	0	0.00
Gadwall	2,229	5.01	2,738	7.60	2,985	8.29
Wigeon	2,804	6.30	4,679	12.99	2,707	7.51
Green-winged teal	2,157	4.85	3,584	9.95	3,124	8.67
Blue-winged Teal/Cinnamon teal	1,330	2.99	747	2.07	1,805	5.01
Northern shoveler	216	0.49	299	0.83	625	1.73
Northern pintail	467	1.05	896	2.49	417	1.16
Wood duck	180	0.40	299	0.83	347	0.96
Redhead	72	0.16	299	0.83	208	0.58
Canvasback	72	0.16	348	0.97	0	0.00
Great scaup	0	0.00	0	0.00	0	0.00
Lesser scaup	36	0.08	299	0.83	0	0.00
Ring-necked duck	108	0.24	548	1.52	208	0.58
Goldeneyes	1,258	2.83	3,634	10.09	625	1.73
Bufflehead	144	0.32	249	0.69	694	1.93
Ruddy duck	36	0.08	0	0.00	69	0.19
Long-tailed duck	0	0.00	0	0.00	0	0.00
Scoters	0	0.00	0	0.00	0	0.00
Hooded merganser	0	0.00	0	0.00	0	0.00
Other mergansers	36	0.08	100	0.28	139	0.39
Other ducks	0	0.00	0	0.00	0	0.00
TOTAL	33,400	75.05	44,503	123.52	36,028	100.00
TOTAL DUCK HARVEST	33,400+/-27%		44,500+/-39%		36,000+/-32%	
TOTAL ACTIVE DUCK HUNTERS	3,600+/-19%		4,100+/-20%		3,300+/-18%	
TOTAL DUCK HUNTER DAYS AFIELD	18,800+/-22%		22,300+/-26%		18,700+/-26%	
SEASONAL DUCK HARVEST PER HUNTER	9.2+/-33%		10.7+/-44%		10.8+/-37%	
Sample Sizes						
Duck Wings	929		894		519	
Federal Duck Stamps Sold	Unk		Unk		Unk	

[a] Central and Pacific Flyway estimates are combined and will continue to be for the near future.

Source: USFWS. HIP preliminary harvest estimates and Duck Stamp sales.

Table 8. Flyway-specific estimates of duck harvest in Wyoming during the 2003-10 hunting seasons.

Duck Harvest Year	Central Flyway	Pacific Flyway	Total
2003	35,700	3,900	39,600
2004	39,700	3,100	42,800
2005	25,900	10,000	35,900
2006	31,200	14,100	45,300
2007	37,000	12,900	49,900
2008	26,900	6,500	33,400
2009	32,700	11,800	44,500
2010	25,200	10,800	36,000

Source: USFWS. HIP preliminary harvest estimates.

Table 9. Changes in ducks and mergansers counted during the mid-winter survey in Wyoming, 2011 to the long-term average.

	CENTRAL FLYWAY			PACIFIC FLYWAY		
SPECIES	**2011**	**LTA**	Between 2011 and The 1992 - 10 Average	**2011**	**LTA**	Between 2011 and The 2002 - 10 Average
Mallard	46,092	59,259	-22%	1,719	1,899	-9%
Gadwall	1,074	997	8%	4	10	-60%
American wigeon	1,485	1,059	40%	0	0	0%
Green-winged teal	293	490	-40%	15	36	-58%
Blue-winged teal/ Cinnamon teal	0	0	0%	0	0	0%
Northern shoveler	0	19	-100%	0	0	0%
Northern pintail	117	179	-35%	0	1	-100%
Wood duck	28	22	27%	0	0	0%
Redhead	35	11	218%	0	97	-100%
Canvasback	0	0	0%	0	0	0%
Scaup	126	21	500%	0	0	0%
Ringneck	83	76	9%	0	0	0%
Goldeneye	9,148	7,774	18%	2,106	1,722	22%
Bufflehead	122	137	-11%	0	3	-100%
Ruddy duck	0	3	-100%	0	0	0%
Mergansers	1,740	2,861	-39%	557	452	23%
Unidentified	0	35	-100%	0	91	-100%
TOTAL	60,343	72,943	-17%	4,401	4,311	2%

Source: WGFD and USFWS 1992 - 2011 MWS reports.

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HI-LINE POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

Prior to 2000, the Department's management objective was based on indicated breeding pairs of Canada geese. In 2000, the Department began reporting the total number of Canada geese counted in the April/May breeding ground survey. This is the common measure used by other jurisdictions in the Central Flyway.
The number of Canada geese from the Hi-Line population that breed in Wyoming has exceeded the Department's objective for several years (Table 1). No visibility correction factor (VCF) was used to calculate these indices. Consequently, they differ from those previously calculated with a VCF of 2. The Waterfowl Section is inadequately staffed to survey all management areas annually. The decrease in the number of Canada geese counted, the last 2 years, was attributed to high water and cold weather conditions. Due to observer medical issues, the breeding ground survey was not flown in 2011. Population counts for 2010 were projected to derive a 2011population estimate.

TRAPPING AND BANDING STUDIES

No HLP Canada geese were trapped and banded during 2011. The most recent banding effort was in 2004. Nine Canada geese that survived an oil spill were banded at Kaycee in July 2004. One of the geese, an adult male was recovered near Greeley during January 2011.

HARVEST

The number of hunters and recreation days were below the Department's objectives for the Hi-Line and Short Grass Prairie populations (Table 2). However, harvest was above the objective. The only year all three parameters exceeded objectives was 2005. Harvest increased 72% from 2009 to 2010. The statewide goose harvest estimated by the USFWS is 39% lower than the Wyoming state estimate (Tables 2 and 3 of this chapter and Tables 6 and 7 of the RMP of CAGE chapter). The Canada goose season opened September 25 in zone C2 of the Central Flyway. The season opened October 2 throughout zone C1 of the Central Flyway; Goshen and Platte Counties were open October 2 through 19 and November 13 through February 7. All goose species collectively are included in the estimates of goose harvest and hunter activity.

During 2010-11, shooting hours for dark geese were ½ hour before sunrise until 1:00 p.m. in Goshen and Platte counties, except all-day hunting was allowed October 2-19, all Saturdays and

Wednesdays from November 13 through December 31, and all Saturdays, Sundays, and Wednesdays from January 1 through the close of the dark goose season.

WINTER SURVEY

Mid-Winter Waterfowl Survey

State and Federal agencies conduct a mid-winter waterfowl survey throughout the United States during the first week in January. The purpose of the survey is to estimate the continental population and distribution of wintering waterfowl. Midwinter counts of the Hi-Line and Short Grass Prairie populations of Canada geese are summarized in Table 5. Near-normal winter weather increased the migration of geese from northern breeding and staging grounds. In eastern Wyoming most roost sites held adequate water due to an increase in precipitation. The 2011 count for Goshen and Platte counties was the highest since at least 1998.

RECOMMENDATIONS

1. Continue the staggered sunset and 1 P.M. hunting closures for geese in Goshen County.

2. Continue the breeding population survey, mid-winter survey and banding program (as manpower and resources allows).

3. Determine the effect all-day shooting has on resident and migrating geese in Goshen County.

4. Determine what actions can be taken to maximize harvest of Canada geese from the Hi-Line Population. Continue hunting dark geese in all Central Flyway counties for maximum season length of 107 days.

Table 1. Canada goose breeding populations in the Hi-Line range of Wyoming.

MANAGEMENT AREA	MEAN 2005-2009	2009	2010	2011	CHANGE BETWEEN 10 AND 11	OBJECTIVE
Missouri and Little Powder Rivers	2,875	2,131	2,131	2,131	NA	1,820
Tongue/Powder Rivers	3,326	2,899	2,899	2,899	NA	718
Central North Platte River	1,238	1,518	1,136	1,136	NA	666
Lower North Platte River	1,156	960	1,092	1,092	NA	1,128
South Platte River	136	81	81	81	NA	26
Upper North Platte River (Laramie Plains)*	1,008	785	785	785	NA	513
TOTAL	9,739	8,374	8,124	8,124	0%	4,871

* Represents probable Hi-Line production area in Albany county and the Medicine Bow Drainage.
Not all management areas are surveyed annually. To generate population estimates areas not surveyed during a year were assigned the most recent year's data. No visibility correction factor was used.
Source: WGFD. Unpublished data.

Table 2. Hi-line and SGP Canada goose harvest in Wyoming.

	MEAN	MANAGEMENT AREA			CHANGE BETWEEN	
	2004-08	2008	2009	2010	09 and 10	OBJECTIVE
		MISSOURI AND LITTLE POWDER RIVER				
No. Hunters	238	318	185	85	-54%	299
No. Rec. Days	811	965	1,077	418	-61%	1,495
Harvest	941	1,395	1,502	2,293	53%	598
		TONGUE/POWDER RIVER				
No. Hunters	176	101	148	187	26%	286
No. Rec. Days	652	220	634	895	41%	1,430
Harvest	521	173	654	1,211	85%	715
		CENTRAL NORTH PLATTE RIVER				
No. Hunters	689	650	579	616	6%	1,106
No. Rec. Days	4,353	3,572	3,689	3,120	-15%	5,530
Harvest	2,673	2,831	1,675	2,134	27%	1,465
		LOWER NORTH PLATTE RIVER				
No. Hunters	2,255	1,948	1,881	2,518	34%	2,772
No. Rec. Days	13,644	13,005	10,222	14,417	41%	15,246
Harvest	17,406	17,921	11,727	20,705	77%	12,044
		SOUTH PLATTE RIVER				
No. Hunters	58	31	79	92	16%	68
No. Rec. Days	250	94	254	619	144%	272
Harvest	222	260	123	461	275%	170
		UPPER NORTH PLATTE RIVER*				
No. Hunters	55	59	68	56	-18%	165
No. Rec. Days	173	207	258	316	22%	742
Harvest	116	281	103	309	200%	330
TOTAL						
No. Hunters	3,471	3,107	2,940	3,554	21%	4,696
No. Rec. Days	19,883	18,063	16,134	19,785	23%	24,715
Harvest	21,879	22,861	15,784	27,113	72%	15,322

* Calculated as 33% of the Upper North Platte Management Area.

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2005-2011.

Table 3. HIP estimates of goose harvest and hunter activity in Wyoming[a] during the 2008-2010 regular hunting seasons.

GOOSE SPECIES COMPOSITION	2008	% OF BAG	2009	% OF BAG	2010	% OF BAG
Canada Goose	27,500	129.72	21,134	86.37	24,378	99.63
Snow Goose	0	0.00	66	0.27	0	0.00
Blue Goose	0	0.00	0	0.00	0	0.00
Ross's Goose	0	0.00	0	0.00	90	0.37
White-fronted Goose	0	0.00	0	0.00	0	0.00
Brant	0	0.00	0	0.00	0	0.00
Other Goose	0	0.00	0	0.00	0	0.00
TOTAL	27,500	129.72	21,200	86.64	24,468	100.00
TOTAL GOOSE HARVEST	27,500+/-29%		21,200+/-46%		24,500+/-24%	
TOTAL ACTIVE GOOSE HUNTERS	3,700+/-17%		3,600+/-19%		3,800+/-15%	
TOTAL GOOSE HUNTER DAYS AFIELD	20,300+/-26%		17,000+/-23%		20,000+/-22%	
SEASONAL GOOSE HARVEST PER HUNTER	7.5+/-33%		5.8+/-50%		6.4+/-28%	
ACTIVE WATERFOWL HUNTERS[b]	5,200+/-14%		5,800+/-15%		5,700+/-12%	
Sample Sizes						
Goose Tails	426		322		273	
Federal Duck Stamps Sold	Unk		Unk		Unk	

[a] Central and Pacific Flyway estimates are combined and will continue to be for the near future.

[b] Duck and goose hunters combined.

Source: USFWS. HIP preliminary harvest estimates.

Table 4. Flyway-specific estimates of goose harvest in Wyoming during the 2003-10 hunting seasons.

Goose Harvest Year	Central Flyway	Pacific Flyway	Total
2003	23,400	1,200	24,600
2004	20,600	2,200	22,800
2005	18,900	1,200	20,100
2006	21,200	1,700	22,900
2007	11,900	1,100	13,000
2008	22,500	5,000	27,500
2009	17,100	4,100	21,200
2010	20,500	3,900	24,400

Table 5. Mid-winter surveys of Hi-line/SGP Canada geese in Wyoming, 2007 - 2011.

Population Hi-line	2007	2008	2009	2010	2011	Average
LOWER NORTH PLATTE RIVER						
Goshen and Platte Co.	10,208	6,155	32,377	33,926	57,919	28,117
CENTRAL NORTH PLATTE RIVER						
Carbon, Converse and Natrona Co.	5,210	3,721	9,777	8,552	11,456	7,743
TOTAL	15,418	9,876	42,154	42,478	69,375	35,860

SGP	2007	2008	2009	2010	2011	Average
LOWER NORTH PLATTE RIVER						
Goshen and Platte Co.	698	378	3,203	1,414	4,765	2,092
CENTRAL NORTH PLATTE RIVER						
Carbon, Converse and Natrona Co.	356	228	967	162	943	531
TOTAL	1,054	606	4,170	1,576	5,708	2,623

Hi-line and SGP combined	2007	2008	2009	2010	2011	Average
LOWER NORTH PLATTE RIVER						
Goshen and Platte Co.	10,906	6,533	35,580	35,340	62,684	30,209
CENTRAL NORTH PLATTE RIVER						
Carbon, Converse and Natrona Co.	5,566	3,949	10,744	8,714	12,399	8,274
TOTAL	16,472	10,482	46,324	44,054	75,083	38,483

Source: WGFD. Unpublished data.

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ROCKY MOUNTAIN POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Joe Bohne, Staff Biologist and Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

Prior to 2000, the Department based its management objective on the number of indicated breeding pairs of Canada geese. In 2000, the Department began reporting the total number of Canada geese counted in April/May. This is the common measure used by other jurisdictions in the Central Flyway. The Pacific Flyway is currently in the process of revising the Rocky Mountain Population (RMP) Canada goose management Plan. When the revision is completed, the key changes to the plan will be reported in this annual report.

Breeding ground surveys of the Rocky Mountain Population (RMP) of Canada geese are summarized in Table 1. The 2011 survey was not done because both biologist observers were incapacitated by medical conditions. The 2010 survey was conducted in both the Central and Western Reference areas. In the Western Reference Area all management areas were flown except Yellowstone Park and the Great Divide Basin. In the Central Reference area, only the Wind River and Sweetwater River management areas were surveyed. The number of breeding geese declined in most areas compared to 2009 counts. However, increases were noted in the Salt River, Lower Bear River, and Wind River management areas. Overall, numbers were down by 11% in the Western Reference area, 1% in the Central Reference Area, and 7% overall compared to the 2009 counts. In 2010, the total population count of 7,720 geese was 11% below the 2004-2008 average of 8,634 geese.

The breeding population (BPOP) count methodology was revised in 2008 by dropping the visibility correction factor (2 X observed value) to comply with the U. S. Fish and Wildlife Service protocol for data collection. Table 1 was revised accordingly and the data reported prior to 2008 represent a 50% reduction in goose numbers compared to the data reported in the 2007 annual report.

The 2010 count for the Western Reference Area (3,832) is 36% under the population objective (5,998). The 2010 survey total in the Central Reference Area (3,888) is 27% over the population objective (3,050) for that portion of the population in Wyoming (Table 1).

In recent years Yellowstone National Park (YNP) has not been surveyed although a large number of geese breed and summer in that area. If YNP were included in this report, breeding goose population estimates would be much higher.

Prolonged drought conditions in the Pacific Flyway portion of the population are thought to be at least partially responsible for the decline in the breeding population observed prior to 2005. However, improved precipitation during winter and early spring from 2005 to 2006 resulted in

increased stream flows and improved wetland conditions, which apparently resulted in improved goose production and reversed the declining population trends seen earlier in the decade. Drought conditions returned in 2007 in the Western Reference Area. Drought conditions were also prevalent in the Central Reference Area in recent years but goose production continued to increase. In 2008, good to exceptional winter precipitation improved water conditions but a cold, late spring resulted in a drop in gosling production. Many late broods were observed in the Western Reference Area suggesting there was considerable renesting activity. In 2009 good winter precipitation and late spring rains provided favorable water conditions accompanied by increased brood production and survival. In 2010 a cold wet spring apparently resulted in poor production in most areas. The Salt River management area was a notable exception. In some years with below normal snowpack and low spring run-off, or delayed run-off due to cool spring weather, goose production can be enhanced because nests are not flooded out. In 2011 a late spring with cold, wet conditions and record snow pack in many areas resulted in a delayed run-off but flooding occurred in many low-lying areas at the peak of run-off. Anecdotally it appeared many geese were able to bring off their broods prior to high water events in the Snake and Salt River drainages.

It is unclear if the general early season for geese in the western reference area has had an adverse impact on the local breeding population and is a factor in the decline observed in the BPOP of the RMP in the western reference area. The lack of banding data makes it impossible to tell what the harvest rates are for locally produced birds taken in Wyoming in the early and late goose seasons versus the harvest in adjacent states and if these harvest rates are excessive. Geese taken during the early season are generally locally produced geese but birds taken later may include birds that originate in Yellowstone National Park or southwest Montana. However, there does not appear to be a significant migration of geese into the western reference area from adjacent states.

The Pacific Flyway Study Committee will be revising the RMP Canada Goose Plan in the upcoming year. It is possible the Pacific and Rocky Mountain populations may be combined into a single meta-population in the new management plan. Since surveys indicate breeding populations have deviated significantly from objectives for many years in several management areas in both reference areas, it may be prudent to reconsider population objectives for Wyoming in the next year

MOLT SURVEY

Molting goose surveys were historically flown about every three years. Since the surveys are not used to set seasons and the counts represent molting birds from several populations and states, the primary value of the survey is to document important molting habitat and shifts in use over time. Periodic surveys should be flown but have a low priority compared to other surveys for waterfowl in Wyoming. Molting surveys are now scheduled every fifth year if funding is available.

The molting goose survey was not conducted in 2009 due to funding limitations but was completed in 2010. The previous survey was conducted in late June, 2005. Results of the 2010 surveys are summarized in Table 2. The number of molting geese counted in 2010 (19,311) was 4% below the 2002-2006 mean (20,194). As usual, Yellowstone Lake/Yellowstone Meadows and the Wheatland Reservoirs were the major molting areas. In 2010 water levels in the two

Wheatland reservoirs were significantly higher than in previous years. Many of these geese are produced in adjacent states and migrate to remote locations in Wyoming to molt.

TRAPPING AND BANDING STUDIES

The U.S. Fish and Wildlife Service began a reward band study of RMP Canada Geese in 2005 to evaluate changes in goose distribution and harvest patterns. Some states had been trapping geese in this population for several years. Colorado and Utah had banded about 10,000 birds by 2005 and Utah has banded at least 1000 geese in subsequent years as part of an urban goose study. In 2006, RMP geese were trapped at two sites near Farson, WY in the Western Reference Area. No trapping and banding efforts occurred in 2007. An effort was made to trap and band geese at the National Elk Refuge and Lower Slide Lake in Teton County in 2008. Table 3 summarizes the direct band recovery rates for the geese banded in Wyoming during 2004-2008. Direct recoveries are based on band returns during the same biological year in which the birds were banded. In 2004, 70 geese were banded at Ocean Lake. There were 9 band returns from hunters in Wyoming and 1 from Colorado. The direct band recovery rate for these banded birds was 14.3% (10/70). In 2005, 24 geese were banded at Ocean Lake and 3 bands were returned from hunter harvested birds, all in Wyoming. The direct band recovery rate was 12.5% (3/24) for these birds. A total of 387 geese were banded at Wheatland Reservoir Number 3 on June 15, 2005. Four of these geese died from stress and were recovered following the trapping operation. Thirteen geese banded previously were also recaptured. Based on a sample of 387 geese banded (less the 4 trapping mortalities) a direct recovery rate of 20.4% (78/383) was reported. Only 3 (3.8%) of these band recoveries occurred in Wyoming but 48 (61.5%) were recovered as hunter harvest birds in Colorado. An additional 8 bands were returned from Utah, 6 from New Mexico, 7 from Arizona, 4 from California, and 1 each from Oklahoma, North Dakota, and Nebraska.

A total of 451 adult geese were banded at Big Sandy Reservoir on June 20, 2006. On June 21, 2006 a total of 121 adult birds were banded at Eden Reservoir along with 3 local or juvenile geese. Based on the updated band return data, a direct recovery rate of 14.4% (83/575) was reported from geese banded at Big Sandy and Eden Reservoirs near Farson in June 2006. Band returns from Wyoming accounted for 51.8% (43/83) of the recoveries. Band returns also were reported from Colorado (21/25.3%), Utah (11/13.3%), New Mexico (8/9.6%), and Arizona (1/1.2%). Of the 43 direct recoveries from geese banded on the reservoirs near Farson, WY in 2006, 25 or 58.1% were from geese harvested during the early September goose hunt in the Pacific Flyway and 18 or 41.9% came from the regular hunting season. All band returns from Wyoming came from the Pacific Flyway portion. Most of the geese taken outside Wyoming were harvested in areas that appear to provide winter habitat or along winter migration routes. Surprisingly, no band returns were reported from California. Since few geese winter in the Pacific Flyway portion of Wyoming (Table 9), it is reasonable to assume the band returns from geese harvested in other states reflect migration patterns to winter habitat.

In 2008 a very modest banding effort was initiated in the Pacific Flyway portion of Wyoming in an effort to determine harvest rates and seasonal movements of birds produced there. This effort involved capturing and banding 43 geese at the National Elk Refuge Visitor Center pond on July 1, 2008.

Forty-two birds were banded and 16 Avian Influenza samples were taken from adult birds. One adult bird died during trapping. Fifteen after-hatch-year geese and 17 local (hatch-year) geese were banded. Although several other prospective trap sites were available on the Refuge, the geese apparently moved their broods into the main marsh just prior to the survey, so trapping was not an option. Two attempts were made to trap geese on Lower Slide Lake on the Gros Ventre River but neither was successful. They were predominately molting geese.

Eleven (26.2%) direct recoveries were reported from the geese banded in 2008 on the National Elk Refuge. Ten recoveries came from birds harvested in the early goose season in 2008 in Jackson Hole and 1 goose was harvested in New Mexico in the early winter.

Band return data from the trap sites in the central reference area of suggest that geese banded at Ocean Lake and Wheatland Reservoir Number 3 are mixed stocks from the Rocky Mountain and Highline populations. Apparently most of the molting geese at Wheatland Reservoir Number 3 come from areas outside Wyoming, predominantly Colorado (61.5% of band returns). However some geese were harvested in Utah, New Mexico, Arizona, and California (10% or less of the band returns are reported from those states). It is unclear if molting geese originate from those states and come to Wyoming to molt or if they are birds from unknown sources that are harvested on their winter range or killed during their winter migration. It is important to band more locally produced geese improve our understanding of seasonal movements and harvest rates in other states.

HARVEST

Early Season

Early season regulations are summarized in Table 4. An early Canada goose season is not offered in the central reference area. Prior to 2004, early goose hunts in 3 three of 6 areas coincided with the RMP sandhill crane seasons in the Pacific Flyway. Quotas of goose permits were tied to the crane permit allocation. Permits were also required for the early goose hunt in Teton County, initiated 1997, but were not subject to a quota. The early goose season was expanded in 1999 to include the Blacks Fork/Smith Fork (Hunt Area 7). A new goose hunt area in the Little Snake River drainage was added in 2003. In 2004 the early goose season in the Pacific Flyway became a general hunt with no special permits required. The September hunting season is designed to address damage problems by moving birds off private irrigated hay meadows and cropland while providing some additional hunting opportunity. The transition to a general hunt was encouraged by the USFWS to reduce complex regulations and was supported by the Department's regional personnel to deal with growing damage complaints.

The early September hunt accounted for a small portion of the overall goose harvest in the western reference area when the hunt was a permit based hunt. In 2003 the early harvest was about 15% of the regular season harvest. Some shifts in goose distribution were noted following the early hunts, suggesting the early season may be successfully addressing damage problems. However, some hunters are concerned the early hunts compromise hunting opportunity at the start of the regular season. From 1997-2003 goose harvest in the early season averaged 310 birds. With the advent of the early general hunt it was difficult to assess the impact of the early season on harvest except to monitor the harvest from the sandhill crane permit holders who also

hunted geese. The harvest survey in 2004 was not designed to specifically survey early season goose hunters. Crane permit holders may not target geese since their primary quarry is sandhill cranes, while other hunters view a crane as a bonus bird in the early goose hunt. Trends in the goose harvest by crane permit holders are probably not a reliable indicator of the overall trend in the early season goose harvest. The goose harvest by crane permit holders will not be tracked in the 2011 crane harvest survey.

A total of 110 hunters had crane permits in 2005 compared to 161 in 2006. Only 100 crane permits were available in the 4 crane hunt areas in the Pacific Flyway portion of the state in 2007 but that number increased in 2008 and 2009 to 150 and increased again to 175 permits in 2010. The goose harvest by crane permit holders has fluctuated in all hunt areas in recent years as a result in a modification of the harvest allocation for RMP of Sandhill Cranes in Wyoming (Table 5).

The numbers of geese harvested by crane permit holders averaged 1.41 birds per hunter from 1994 to 2003. The harvest rate fluctuated in recent years, from a low of 0.72 geese per hunter in 2005 to 1.65 birds per hunter in 2003. In the last three years the average harvest of geese by crane permit holders was 1.2 geese birds per hunter in 2008, 0.9 geese per hunter in 2009, and 1.06 geese per hunter in 2010(Table 5).

Since the early season framework changed to a general 8 day season in 2004, the goose harvest has increased. In order to track the harvest in the early season, the annual harvest survey was modified in 2005 to survey hunters who participated in the early goose hunt. Based on that survey the estimated harvest was 628 geese in 2005, then increased to 1, 326 geese in 2006 and 1, 426 geese in 2007. However, since 2008 the goose harvest in the early season has declined. to only 886 geese was reported in the harvest 2010 survey. An average of 2.1 geese per hunter was reported in 2005 compared to 2.4 geese per hunter in the 2006, but the average harvest declined to 1 1.2 geese per hunter in 2009. In 2010 an average of 1.8 geese per hunter was reported in the harvest survey (Table 6).

There is a corresponding increase in the number of hunters from 2005 to 2007 but declining numbers in the most recent three years. Hunter numbers increased from 298 in 2005 to 739 in 2007 but declined to 486 hunters by 2010. Apparently hunters were slow to respond to the early season opportunities and it took several years to see much of an increase in hunting pressure. In 2006, the early season harvest comprised 37% (1,326/3,606) of the total goose harvest in the western reference area. In 2008 the proportion of the total goose harvest taken during the early season was 38% (1,101/2,879). In 2009, proportion of geese taken in the early season harvest increased to 50% (808/1626) of the total goose harvest in the western reference area. In 2010 the early season harvest comprised 40% (886/2,228) of the total goose harvest in the western reference area. The early season hunt takes a large proportion of the annual harvest in only 8 days. Geese are particularly vulnerable to hunting in early September, with family groups decoying fairly readily compared to later in the season when geese are in larger flocks and become decoy shy. Shifts in goose distribution and changes in harvest rates in both the early and late goose hunts should continue to be monitored in the western reference area (Tables 6 and 7).

Regular Season

Harvests during the regular waterfowl season in the western and central reference areas are summarized in Tables 7 and 8, respectively. RMP Canada geese comprise most of the harvest in the management areas that constitute the central reference area and almost all the geese in the western reference area. In the western reference area, numbers of hunters, recreation days, and harvest declined sharply in 2008 and again in 2009 compared to the 2003-2007 mean. The 2008 harvest in the western reference area was 1,778 geese, an 18% decrease from the average annual harvest of 2,168 geese from 2003-2007. The 2009 harvest of 818 geese is 63% below the 2003-2007 average and 54% below the 2008 harvest estimate. The 2010 harvest for the western reference area is 39% below the 2001-2007 mean and 28% below the estimated harvest in 2009. The harvest during the regular season increased in the Little Snake River, Upper Bear River and the Great Divide Basin in 2010 but that increase was relatively inconsequential and may simply reflect sampling bias from one year to the next. However the 2010 harvest decreased sharply in other management areas that traditionally have produced the greatest harvest in the western reference area (Table 7).

It is unclear how the early season harvest is affecting regular season opportunities in the western reference area. Declines were noted in both the early and regular seasons in 2008 – 2010, possibly reflecting poor reproduction and/or declining access in some areas. If the early season harvest and hunting pressure continued to increase from the 2007 levels, it is almost certain goose distribution and availability to hunters would be affected during the regular season in the western reference area. However, participation in the early hunt has declined for the last three years (Table 7) and only a few complaints were registered by early season or regular season hunters. Lockman et al (1987) found that hunting pressure during the early goose and crane hunt in the initial years of the limited quota hunt displaced geese out of Star Valley and Bear River/Cokeville Meadows. Presumably these geese moved into adjacent areas in Utah or Idaho where there was no early goose season. This displacement addressed goose depredation issues in the two management areas (Lockman et al 1987).

The number of hunter days in the central reference increased slightly (+12%) in 2010 compared to 2009 (8,903 days compared to 7,948 days) and the estimated harvest in 2010 (11,254 geese) was substantially higher than the 2009 harvest estimate (7,918 geese). The average harvest from 2003-2007 was 5,883 geese. The estimated annual harvest has fluctuated in past years. The reported harvest in 2010 increased in all management areas except the Wind River area which was essentially unchanged from 2009. The harvest in the Bighorn Basin contributes much of the annual harvest in the central reference area and accounted for the largest numerical increase in 2010 (Table 8).

The harvest objective for RMP geese in Wyoming is 7,967 including 3,520 geese in the central reference area and 4,447 in the western reference area. The actual harvest in the central reference area has exceeded the objective for the period of record in this report but the harvest in the western reference area has fallen well below the objective over the same time period. In 2009, the total estimated harvest from the RMP was 8,736 geese, well below the 12, 596 geese harvested in 2010, but still 10% above the objective (Tables 7 and 8).

Annual changes in harvest estimates and population counts may derive from several factors including: actual changes in the population, shifts in distribution of locally produced birds as a result of drought or early season hunts, changes in migration patterns and annual movements of geese from Montana and Alberta which provide much of the harvest of geese in the central reference area late in the hunting season, or poor counts due to a number of variables. It is uncertain if the early September season may be displacing geese from portions of the western reference area prior to the regular hunting season, but this is clearly possible. Lockman (1987) reported geese from Star Valley were displaced out of the valley after the early goose and crane hunt was initiated to address crop depredation problems. At that time there were substantially more geese counted in the valley during breeding population surveys.

MID-WINTER SURVEY OF RMP CANADA GEESE

In January 2011, 16,418 geese were counted in the mid-winter survey in the central reference area compared to 10,294 geese in 2010 and 15,798 geese in 2009 (Table 9). The 2007 count of 19,512 geese was the highest count during the 5 year period of record. No doubt winter weather patterns affect the number of geese in the central reference area of Wyoming. More birds remain in Montana during mild weather and severe winter weather pushes birds south. If the winter is fairly open in Wyoming, large numbers of geese stage in the Bighorn Basin and Wind River Management areas and are reflected in the mid-winter waterfowl survey.

A total of 497 geese were counted in the western reference area in February, 2011. Beginning in 2008, the mid-winter survey was flown in early February to coincide with the winter trumpeter swan survey. This change was made to reduce cost and exposure to risk since comparatively few waterfowl typically found there winter in the western reference area and no significant movements between adjacent states is likely at this time in the winter. In 2009, 340 geese were counted and in 2010 only 147 geese were observed in the mid-winter survey (Table 9).
The total count for the RMP geese in 2007 was 20,149 geese but the total count in 2008 dropped to 9,335 geese. In 2009 the total count for the RMP in Wyoming was 16, 138 geese but the goose count dropped to 10, 441 in 2010.In 2011 16,915 geese were counted in the mid-winter survey in the RMP (Table 9). Over the past 5 years, counts have fluctuated in response to winter weather patterns.

In most years, suitable winter habitat is limited throughout most of the western reference area. Goose numbers fluctuate depending on the amount of open water and winter severity in Montana and central Wyoming. Overall, the RMP is well above objective and most producing states have liberal hunting seasons including early hunts to deal with local depredation issues.

RECOMMENDATIONS

1. Continue breeding ground surveys, harvest surveys, and mid-winter surveys.

2. In 2011 and 2012 continue the general, early September hunt in the Pacific Flyway portion of Wyoming to address local damage problems. The bag limit will be 2 a day and 4 in possession

from September 1-8 in 2011 but we are considering increasing the daily bag limit to 3 geese per day with 6 in possession in 2012 in Teton County to address local depredation issues. This early hunt should be closely monitored. The decline in goose production in some portions of the western reference area has been a concern and the early general season framework may result in excessive harvest of local geese or could substantially change fall distribution, adversely affecting the harvest opportunities in the regular season. The drop in the breeding population in the western reference area reference areas in 2009 and 2010 and the low harvest in the western reference area in 2009 and 2010 suggest population and harvest trends should be scrutinized carefully in the future

3. Coordinate with the U.S. Fish and Wildlife Service regarding acquisition, planning, and development of the Cokeville Meadows National Wildlife Refuge. Work with the Service and other partners to identify funding to accomplish acquisition and habitat development goals on the Refuge. The Service is working on the CCP for the Refuge in 2010-2011. Continue to work collaboratively to develop an effective CCP and hunt plan.

4. Continue the trapping and banding program in the Western Reference Area, as resources and time allow, to determine harvest rates and seasonal movements of geese produced in Wyoming. Conduct a detailed band recovery and distribution analysis as more geese are banded in the Wyoming segment of this population.

5. Represent Wyoming's interests in the update and revision of the RMP Goose Management Plan with other members of the Pacific Flyway Study Committee in 2011-2012.

6. Review the population and harvest objectives for the RMP of Canada geese in Wyoming in conjunction with the management plan revision being conducted by the Pacific Flyway Study Committee.

Table 1. Breeding population counts within the Rocky Mountain Population of Canada geese.

WESTERN REFERENCE AREA	MEAN 2004-08	2009	2010	2011	CHANGE BETWEEN 09 AND 10	OBJECTIVE
Yellowstone Park	N/A	N/A	N/A	N/A	N/A	N/A
Snake River	521	675	594	594	0%	589
Upper Green River	389	417	318	318	0%	718
Salt River	436	216	423	423	0%	615
Lower Bear	557	449	555	555	0%	2,230
Great Divide Basin	28	24	24	24	0%	26
Lower Green River	646	808	502	502	0%	461
Ham's/Black's River	902	1,091	868	868	0%	795
Upper Bear River	229	256	246	246	0%	308
Little Snake River	271	380	302	302	0%	256
TOTAL	3,979	4,316	3,832	3,832	0%	5,998
CENTRAL REFERENCE AREA						
Upper North Platte River	724	539	540	540	0%	384
Big Horn River	1,420	1,360	1,360	1,360	0%	1,051
Wind River	1,936	1,277	1,525	1,525	0%	1,333
Sweetwater River	575	769	463	463	0%	282
TOTAL	4,655	3,945	3,888	3,888	0%	3,050
OVERALL TOTAL	8,634	8,261	7,720	7,720	0%	9,048

Not all management areas are surveyed annually. To generate population estimages during all years, areas not surveyed during a year were assigned the most recent year's data. No visibility correction factor was used.
Source: WGFD. Unpublished data

Table 2. Counts of major molting areas within the Rocky Mountain Population of Canada geese[a].

LOCATION	2002-06	2007	2008	2009	2010	2011
WESTERN REFERENCE AREA	MEAN					
Yellowstone Lake	3,818	NS	NS	NS	2,423	NS
Yellowstone Meadows	978	NS	NS	NS	335	NS
Turbid Lake	288	NS	NS	NS	815	NS
Delusion Lake	28	NS	NS	NS	19	NS
Subtotal	5,112				2,592	
Heart Lake	602	NS	NS	NS	479	NS
Jackson Lake	970	NS	NS	NS	1,061	NS
Subtotal	1,572				1,540	
Sixty-Seven Reservoir	532	NS	NS	NS	1,251	NS
McNinch Res. # 1	113	NS	NS	NS	363	NS
Subtotal	645				1,614	
Big Sandy Reservoir	1,651	NS	NS	NS	1,042	NS
Eden Reservoir	355	NS	NS	NS	712	NS
Subtotal	2,006				1,754	NS
CENTRAL REFERENCE AREA						
Picket Lake Complex	460	NS	NS	NS	821	NS
Subtotal	460				821	
Pathfinder Reservoir	220	NS	NS	NS	417	NS
Wheatland Res. # 2	6,980	NS	NS	NS	7,623	NS
Wheatland Res. # 3	3,199	NS	NS	NS	1,950	NS
Wheatland Reservoirs (2&3)	10,179	NS	NS	NS	9,573	NS
Subtotal	10,399				9,990	
TOTAL	20,194				19,311	

[a] After 1995, only flown every third year. After 2005, only flown every fifth year.
NF - not flown, NS - no survey.
Source: WGFD unpublished data.

Table 3. Direct[1] recoveries of Canada geese from the Rocky Mountain Population banded in Wyoming, 2004-09.

Banding Location	Banding Date	Number Banded	Band Returns					Direct Recovery Rate
			WY	CO	UT	Other	Total	
Ocean Lake	6/10/2004	70	9	1	0	0	10	14.3
Ocean Lake	6/14/2005	24	3	0	0	0	3	12.5
Wheatland Reservoir #3	6/15/2005	387	3	48	8	19	78	20.2
Big Sandy/Eden Reservoirs	6/20-21/06	575	43	21	11	8	83	14.4
National Elk Refuge, JH	7/1/2008	42	10	0	0	1	11	26.2
Total		1098	68	70	19	28	174	15.8

[1] Band returns through the first hunting season after banding.

Source: Bird Banding Laboratory Periodic Encounter Reports through August 2009.

Table 4. Early September hunting regulations for RMP Canada geese, 2000 - 2010.

	YEAR									
HUNT AREA	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1 Bear River										
No. Permits	45	35	30	**	**	**	**	**	**	**
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Bag/Season Limit	3/6	3/6	3/6	2/4	2/4	2/4	2/4	2/4	2/4	2/4
2 Salt River										
No. Permits	60	40	30	**	**	**	**	**	**	**
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Bag/Season Limit	3/6	3/6	3/6	2/4	2/4	2/4	2/4	2/4	2/4	2/4
3 Eden/Farson										
No. Permits	65	55	45	**	**	**	**	**	**	**
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Bag/Season Limit	3/6	3/6	3/6	2/4	2/4	2/4	2/4	2/4	2/4	2/4
5 Teton County										
No. Permits					**	**	**	**	**	**
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Bag/Season Limit	3/6	3/6	3/6	2/4	2/4	2/4	2/4	2/4	2/4	2/4
7 Blacks/Smith Forks										
No. Permits	40	40	40	**	**	**	**	**	**	**
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Bag/Season Limit	3/6	3/6	3/6	2/4	2/4	2/4	2/4	2/4	2/4	2/4
8 Little Snake River										
No. Permits	*	*	20	**	**	**	**	**	**	**
Season Dates (Sept.)			1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Bag/Season			3/6	2/4	2/4	2/4	2/4	2/4	2/4	2/4

Table 5. Harvest and hunter activity during the early September hunting season for RMP geese, 2000-10.

	YEAR									
HUNT AREA	2001	2002	2003	2004[a]	2005[a]	2006[a]	2007[a]	2008[a]	2009[a]	2010
1 Bear River										
No. Hunters	38	33	24	15	24	18	21	27	21	20
Hunter Days	69	48	52	29	47	27	44	51	44	33
Days/Hunter	1.8	1.3	2.2	1.9	2.0	1.5	2.1	1.9	2.1	1.7
Harvest	10	7	7	0	21	11	22	33	22	12
Birds/Hunter	0.26	0.21	0.29	0.00	0.88	0.61	1.00	1.2	1.00	0.6
2 Salt River										
No. Hunters	47	32	18	15	23	30	11	22	11	26
Hunter Days	118	84	49	48	59	87	29	45	29	109
Days/Hunter	2.5	2.6	2.7	3.2	2.6	2.9	2.6	2.1	2.6	4.2
Harvest	62	36	6	19	17	35	18	36	18	4.5
Birds/Hunter	1.42	1.13	0.33	1.27	0.74	1.17	1.60	1.6	1.60	1.71
3 Eden/Farson										
No. Hunters	53	53	38	35	43	73	54	69	54	85
Hunter Days	98	94	62	65	82	135	103	137	103	151
Days/Hunter	1.9	1.8	1.6	1.9	1.9	1.8	1.9	2	1.9	1.8
Harvest	113	108	86	38	27	88	40	73	40	88
Birds/Hunter	2.13	2.04	2.26	1.09	0.63	1.21	0.74	1.1	0.74	1.04
5 Teton County										
No. Hunters	67	89	90							
Hunter Days	117	177	184							
Days/Hunter	1.8	1.9	2.0							
Harvest	122.00	208	187							
Birds/Hunter	1.92	2.3	2.1							
7 Blacks/Smith Forks										
No. Hunters	16	27	29							
Hunter Days	27	57	49							
Days/Hunter	1.7	2.1	1.7							
Harvest	58	50	36							
Birds/Hunter	3.73	1.85	1.24							
8 Little Snake River										
No. Hunters	*	*	4							
Hunter Days			7							
Days/Hunter			1.8							
Harvest			9							
Bird/Hunter			2,25							
9 Uinta County										
No.Hunters	*	*	*	*	*	*	*	10	10	10
Hunter Days								20	22	13
Days/Hunter								2	2.2	1.3
Harvest								8	6	5
Birds/Hunter								0.8	0.60	0.5
TOTAL										
Permits Issued	302	292	292	86	110	161	110	150	150	175
No. Hunters	221	234	199	65	90	121	86	128	96	141
Hunter Days	429	460	396	142	188	249	176	253	198	306
Days/Hunter	2.0	2.0	2.0	2.2	2.1	2.1	2.1	2	2.0	2.2
Harvest	365	409	322	57	65	134	80	152	86	150
Birds/Hunter	1.65	1.75	1.62	0.88	0.72	1.11	0.93	1.2	0.90	1.06

[a]RMP greater sandill crane permit holders only.

* No Season.

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2001-2010.

Table 6. Canada goose harvest and hunter activity during the early season within the western reference area of the RMP.

	YEAR					
MANAGEMENT AREA	2005	2006	2007	2008	2009	2010
5A Snake River						
No. Hunters	52	79	125	77	63	77
Hunter Days	131	208	204	173	153	161
Harvest	84	217	219	205	172	193
5B Upper Green River						
No. Hunters	31	16	49	49	35	0
Hunter Days	56	37	71	74	52	0
Harvest	57	31	78	27	28	0
5C Salt River						
No. Hunters	23	111	136	61	90	71
Hunter Days	67	296	280	111	248	185
Harvest	82	302	301	180	171	161
5D Lower Bear River						
No. Hunters	8	19	48	53	24	55
Hunter Days	23	40	124	130	54	129
Harvest	10	23	181	110	40	105
5E Great Divide Basin						
No. Hunters	2	12	0	3	11	0
Hunter Days	2	14	0	6	11	0
Harvest	5	40	0	3	11	0
5F Lower Green River						
No. Hunters	106	207	121	236	141	178
Hunter Days	230	393	257	528	332	345
Harvest	270	401	217	427	267	208
5G Ham's Fork-Black Fork						
No. Hunters	58	76	148	79	72	35
Hunter Days	92	231	291	160	134	91
Harvest	90	276	306	117	114	54
5H Upper Bear River						
No. Hunters	18	27	102	23	2	24
Hunter Days	35	66	137	36	8	57
Harvest	30	36	114	39	15	12
5H Little Snake River						
No. Hunters	0	0	10	7	12	46
Hunter Days	0	0	10	7	24	91
Harvest	0	0	10	0	0	153
TOTAL						
No. Hunters	298	547	739	589	450	486
Hunter Days	636	1285	1374	1221	1016	1059
Days/Hunter	2.1	2.3	1.9	2.1	23	2.2
Harvest	628	1326	1426	1101	808	886
Birds/Hunter	2.11	2.42	1.93	1.86	1.18	1.82

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2006-2010.

Table 7. Canada goose harvest and hunter activity during the regular season within the western reference area of the RMP [a].

MANAGEMENT AREA	MEAN 2003-2007	2008	2009	2010	CHANGE BETWEEN 09 and 10	OBJECTIVE
SNAKE RIVER						
No. Hunters	183	68	63	75	19%	500
No. Rec. Days	815	261	153	360	135%	2,800
Harvest	393	86	172	62	-64%	500
UPPER GREEN RIVER						
No. Hunters	127	139	69	47	-32%	350
No. Rec. Days	476	377	390	119	-69%	1,750
Harvest	227	297	52	37	-29%	438
SALT RIVER						
No. Hunters	163	198	43	82	91%	800
No. Rec. Days	1,023	1,193	54	558	933%	3,304
Harvest	307	673	185	91	-51%	600
LOWER BEAR RIVER						
No. Hunters	65	42	109	91	-17%	1,500
No. Rec. Days	308	158	391	454	16%	7,500
Harvest	140	102	237	185	-22%	1,800
GREAT DIVIDE BASIN						
No. Hunters	10	0	7	10	43%	100
No. Rec. Days	32	0	16	10	-38%	500
Harvest	20	0	3	10	233%	50
LOWER GREEN RIVER						
No. Hunters	261	240	280	293	5%	475
No. Rec. Days	1,373	1,955	1,450	1,441	-1%	2,375
Harvest	670	600	749	499	-33%	380
HAM'S/BLACK'S FORK						
No. Hunters	132	139	163	76	-53%	370
No. Rec. Days	404	350	994	384	-61%	1,850
Harvest	275	174	462	137	-70%	444
UPPER BEAR RIVER						
No. Hunters	82	125	81	69	-15%	370
No. Rec. Days	308	677	230	235	2%	1,665
Harvest	101	179	3	158	5167%	185
LITTLE SNAKE RIVER						
No. Hunters	19	7	12	25	108%	100
No. Rec. Days	72	9	31	76	145%	500
Harvest	35	9	0	163	0%	50
TOTALS FOR WESTERN REFERENCE AREA						
No. Hunters	1,042	958	827	768	-7%	4,565
No. Rec. Days	4,811	4,980	3,709	3,637	-2%	22,244
Harvest	2,168	2,120	1,863	1,342	-28%	4,447

[a] Data includes all goose species and may include early season harvest information.

Source: Annual Report of Upland Game and Furbearer Harvest, WGFD, 2004-2010.

Table 8. Canada goose harvest and hunter activity during the regular season within the central reference area of the RMP [a].

	MANAGEMENT AREA				CHANGE BETWEEN	
	MEAN 2003-2007	2008	2009	2010	08 and 09	OBJECTIVE
	UPPER NORTH PLATTE RIVER*					
No. Hunters	109	119	136	110	-19%	330
No. Rec. Days	370	563	516	624	21%	1,485
Harvest	157	414	205	612	199%	660
	BIG HORN BASIN					
No. Hunters	942	982	895	869	-3%	1,200
No. Rec. Days	5,668	6,553	5,177	6,126	18%	5,600
Harvest	3,775	5,595	4,988	7,866	58%	1,200
	YELLOWSTONE RIVER					
No. Hunters	14	65	2	10	400%	
No. Rec. Days	97	174	12	18	50%	
Harvest	28	71	2	23	1050%	
	WIND RIVER					
No. Hunters	412	382	480	419	-13%	1,200
No. Rec. Days	1,713	1,556	2,219	2,064	-7%	4,200
Harvest	1,904	1,840	2,687	2,694	0%	1,600
	SWEETWATER RIVER					
No. Hunters	13	0	14	15	100%	100
No. Rec. Days	16	0	24	71	100%	450
Harvest	19	0	36	59	100%	60
TOTALS FOR CENTRAL REFERENCE AREA						
No. Hunters	1,490	1,548	1,527	1,423	-7%	2,830
No. Rec. Days	7,864	8,846	7,948	8,903	12%	11,735
Harvest	5,883	7,920	7,918	11,254	42%	3,520

[a] Data includes all goose species.

* Calculated as 66% of the Upper North Platte River Management Area.

Source: Annual Report of Upland Game and Furbearer Harvest, WGFD, 2004-2010.

Table 9. Mid-winter surveys of the RMP of Canada geese in Wyoming.

MANAGEMENT AREA	2006	2007	2008	2009	2010	2011
Wind River	2,845	6,648	1,231	8,337	1,697	2,876
Big Horn River	4,038	12,864	7,923	7,461	8,349	13,403
Upper North Platte River	0	0	34	0	248	139
CENTRAL REFERENCE AREA	6,883	19,512	9,188	15,798	10,294	16,418
Snake River	95	192	70	99	70	133
Salt River	77	163	49	28	49	106
Lower Green River	455	282	18	213	18	256
Upper Green River	0	0	10	0	10	2
WESTERN REFERENCE AREA	627	637	147	340	147	497
TOTALS	7,510	20,149	9,335	16,138	10,441	16,915

NF= Not Flown

Source: WGFD data.

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SHORT GRASS PRAIRIE POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

The Short Grass Prairie Population (SGPP) nests on Victoria and Jenny Lind Islands and on the Canadian mainland from Queen Maud Gulf west and south to the Mackenzie River and northern Alberta. The MWS index in 2011 was 309,600, 6% higher than the 2010 index. In 2011, the estimated spring population in the NWT was 225,100, a 9% decrease from 2010. Production is expected to be slightly below average and the fall flight similar to that of 2010.

HARVEST

Harvest and hunter activity estimates for both Hi-Line and Short Grass Prairie Canada geese are summarized in Tables 2 and 3. Percentages of HLP and SGPP geese harvested in the Central Flyway portion of Wyoming are listed in Table 1. A harvest objective has not been established for the SGPP. Harvest of this population increased last year. During the most recent 20-year period, 14% of the Canada geese harvested within the HLP range of Wyoming were SGPP geese. Canada geese from the Rocky Mountain Population are also present in the Central Reference Area in Wyoming.

WINTER SURVEY

Mid-Winter Waterfowl Survey
State and Federal agencies conduct the mid-winter waterfowl survey throughout the United States during the first week of January. The purpose is to estimate continental waterfowl populations present during the winter period. Proportions of HLP and SGPP geese counted during January are summarized in Table 2. During the most recent 20-year period, 9% of the Canada geese counted within the HLP range were SGPP geese.

Ground surveys were begun in 1999 to classify large and small Canada geese in Carbon, Converse, Goshen, Natrona, and Platte counties (Table 3). Prior to 1999, hunter-provided samples consisting of at least 100 tail fans were used to estimate the percent of large and small Canada geese in the harvest and waterfowl surveys. This method was appropriate for harvest that occurred throughout the entire season. However, tail fan data are not appropriate for estimating composition of "snapshot" waterfowl surveys. Furthermore, selection bias by hunters may favor larger geese.

RECOMMENDATIONS

1. Continue ground classifications during the mid-winter waterfowl survey to estimate proportions of HLP and SGPP Canada geese that are present.

Table 1. Derivation of Canada goose harvest within the HLP and SGP portion of Wyoming.[a]

Year	Goose Harvest[b]	Percent Hi-Line	Number Hi-Line	Percent Short Grass	Number Short Grass
1991	11,549	89	10,279	11	1,270
1992	9,058	89	8,062	11	996
1993	9,466	96	9,087	4	379
1994	11,638	84	9,776	16	1,862
1995	19,219	83	15,952	17	3,267
1996	6,493	83	5,389	17	1,104
1997	16,553	82	13,573	18	2,980
1998	19,961	88	17,566	12	2,395
1999	13,064	83	10,843	17	2,221
2000	22,782	89	20,276	11	2,506
2001	17,831	78	13,908	22	3,923
2002	14,992	79	11,844	21	3,148
2003	15,918	90	14,326	10	1,592
2004	18,507	85	15,731	15	2,776
2005	43,622	84	36,642	16	6,980
2006	13,041	81	10,563	19	2,478
2007	11,370	88	10,006	12	1,364
2008	22,861	83	18,975	17	3,886
2009	15,785	96	15,154	4	631
2010	27,113	92	24,944	8	2,169
Averages	17,041	86	14,645	14	2,396

[a] Percent HLP or SGP derived from CF wing bee data or ocular estimation. Tail fan data are representative of the entire dark goose season whereas ocular estimation is a one-time snapshot.

[b] Waterfowl management areas 1, 2, and 33% of 3.

Source: USFWS DMBM Wingbee and WGFD harvest data.

Table 2. Proportions of Hi-Line and Short Grass Prairie Canada geese counted during the mid-winter waterfowl survey, based upon wing bee data or ocular estimation.

Year	Goose Count	Percent Hi-Line	Number Hi-Line	Percent Short Grass	Number Short Grass
1992	36,062	89	32,095	11	3,967
1993	29,121	89	25,918	11	3,203
1994	44,228	96	42,459	4	1,769
1995	27,750	84	23,310	16	4,440
1996	44,238	83	36,718	17	7,520
1997*	72,439	95	68,817	5	3,622
1998	37,927	82	31,100	18	6,827
1999*	29,432	87	25,606	13	3,826
2000*	39,689	90	35,720	10	3,969
2001*	50,219	98	49,214	2	1,005
2002*	23,427	93	21,764	7	1,663
2003*	21,992	90	19,812	10	2,180
2004*	40,379	89	35,877	11	4,502
2005*	40,448	94	38,022	6	2,426
2006*	63,844	88	56,184	12	7,660
2007*	16,472	94	15,418	6	1,054
2008*	10,482	94	9,876	6	606
2009*	46,324	91	42,154	9	4,170
2010*	44,248	96	42,477	4	1,771
2011*	75,083	92	69,375	8	5,708
AVERAGES		91		9	

*Ocular estimate

Source: WGFD unpublished data.

Table 3. Ground classification of large and small geese in Goshen, Platte, Converse, Natrona and Carbon counties.

County	Year		LARGE	SMALL	TOTAL	%LARGE	%SMALL
Carbon							
	2007	NS					
	2008		50	1	51	98.0	2.0
	2009		200	1	201	99.5	0.5
	2010	NS					
	2011		147	0	147	100.0	0.0
Converse							
	2007		44	0	44	100.0	0.0
	2008		336	2	338	99.4	0.6
	2009		599	9	608	98.5	1.5
	2010		166	0	166	100.0	0.0
	2011		865	26	891	97.1	2.9
Goshen							
	2007		378	37	415	91.1	8.9
	2008		246	30	276	89.1	10.9
	2009		2633	310	2943	89.5	10.5
	2010		3130	110	3240	96.6	3.4
	2011		2403	240	2643	90.9	9.1
Natrona							
	2007		994	25	1019	97.5	2.5
	2008		589	16	605	97.4	2.6
	2009		1081	35	1116	96.9	3.1
	2010		660	8	668	98.8	1.2
	2011		242	1	243	99.6	0.4
Platte							
	2007		266	53	319	83.4	16.6
	2008		718	70	788	91.1	8.9
	2009		1526	240	1766	86.4	13.6
	2010		1656	98	1754	94.4	5.6
	2011		1446	155	1601	90.3	9.7
Total							
	2007		1682	115	1797	93.6	6.4
	2008		1939	119	2058	94.2	5.8
	2009		6039	595	6634	91.0	9.0
	2010		5612	216	5828	96.3	3.7
	2011		5103	422	5525	92.4	7.6

NS - Not surveyed.

Source: WGFD unpublished data.

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WESTERN CENTRAL FLYWAY POPULATION OF LIGHT GEESE

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

The Western Central Flyway Population includes primarily lesser snow geese and a substantial proportion of Ross's geese. These geese breed in the central and western Canadian Arctic; large nesting colonies are present at Queen Maude Gulf and Banks Island. In 2011, spring phenology was average to slightly delayed in the Queen Maud Gulf area – a marked improvement over last year's late snowmelt. Nesting phenology in the Queen Maude Gulf Sanctuary was delayed 2 days and goose production was expected to be below average again for the fifth consecutive year. Snow goose production is expected to be slightly below average, but likely better than last year.

HARVEST

Light goose hunting regulations during the most recent 10-year period are summarized in Table 1. The light goose season has remained closed in the Pacific Flyway portion of Wyoming due to limited numbers of light geese present and the potential for accidental harvests of resident trumpeter swans. Light goose harvests within the Central Flyway portion of Wyoming are summarized in Table 2.

CONSERVATION ORDER

The Department implemented the light goose conservation order for the 11th consecutive year in 2010 (Tables 1, 2 and 3). Use of electronic callers and hunting one-half hour after sunset were allowed. However, Wyoming statute prohibits hunters from using unplugged shotguns capable of holding more than 3 shells. Participants were required to purchase a Conservation Order Special Management Permit and complete a survey card provided with the permit.

Based on the survey response, 159 hunters harvested 965 light geese. The survey was not refined enough to distinguish geese that were harvested with electronic callers from those shot after sunset. However, these special provisions did increase harvest. Participation and harvest increased over last year, most likely the result of favorable weather during March and more birds available to hunt.

WINTER SURVEY

Mid-Winter Waterfowl Survey

State and Federal agencies conduct the mid-winter waterfowl survey during the first week in January to estimate the continental populations of wintering waterfowl throughout the United States. Mid-winter survey counts of the West Central Flyway light goose population are summarized in Table 4. Generally, very few light geese are present in Wyoming during December and January.

WCFP geese are surveyed annually in the U.S. portion of their winter range, and the entire range, which includes Mexico, is surveyed only once every 3 years. The Mexican survey that was scheduled for 2009 was not conducted due to sociopolitical unrest. In the U.S. portion of the survey, 196,100 geese were counted in January 2011, 18% fewer than last year. Population indices have increased 10% per year during 2001-2011.

RECOMMENDATIONS

1. Continue to implement the light goose conservation order in Wyoming.

2. Continue to maintain liberal seasons and bag limits.

Table 1. Hunting regulations for light geese within the Central Flyway portion of Wyoming.

	HUNTING SEASON									
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Regular Season Dates	10/6-12/31 1/27-2/143	10/5-12/31 1/27-2/13	10/4-12/31 1/27-2/12	10/2-12/31 1/27-2/10	10/1-12/31 1/27-2/9	10/7-1/7 1/27-2/8	10/6-1/1 1/26-2/12	10/4-1/1 1/26-2/9	10/3-12/27 1/21-2/8	10/2-12/26 1/20-2/7
Total Days	107	107	107	107	107	107	107	107	107	107
Bag/Possession Limits	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40
Conservation Order	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Season Dates	3/1-3/31	3/1-4/6	2/23-4/4	2/21-4/3	2/20-4/2	2/19-4/8	2/25-4/13	2/23-4/12	2/22-4/11	2/21-4/10
Bag/Possession Limits	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none

Special Youth Waterfowl Hunting Days are included in total days, but not displayed.
Source: WGFD. Migratory game bird regulations.

Table 2. Light goose harvest within the Central Flyway portion of Wyoming.

Year	Wyoming Data[a]	FWS Data/Regular Season	Conservation Order
1991	N/D	56	
1992	N/D	0	
1993/94	N/D	0	
1994/95	N/D	133	
1995/96	N/D	0	
1996/97	N/D	299	
1997/98	529	266	
1998/99	1845	1811	
1999/00	1326	633	
2000/01	875	114	875
2001/02	3047	0	1215
2002/03	ND	0	1775
2003/04	ND	325	1364
2004/05	ND	0	1070
2005/06	ND	0	2622
2006/07	ND	0	928
2007/08	ND	43	1019
2008/09	ND	0	845
2009/10	ND	66	230
2010/11	ND	90	965

[a]Wyoming harvest data is for February and March only.

N/D - No data.

Source: USFWS Light geese in the Central Flyway June 2011 and Preliminary harvest estimates 2009 and 2010, and WGFD data.

Table 3. Harvest and hunter activity for the Wyoming 2011 light goose conservation order.

	Season			
	February 21 - April 10			
Permits Sold (excludes known collector purchases)	204			
Total Survey Respondents	163			
% Responded	80%			
Active Hunters	159			
Total Days Hunted	520			
Days/Hunter	3.3			
Geese Harvested	873			
Geese Knocked Down, but not retrieved	82			
Total Harvest	965			
Harvest/Hunter	6.1			
Hunters using Electronic Callers	109			
Harvest by Hunters using Electronic Callers	755			
Average Harvest of Hunters using Callers	7.0			
Hunters Hunting After Sunset	55			
Harvest by Hunters Hunting After Sunset	89			
Average Harvest of After Sunset Hunters	1.6			
Hunters Using Callers and Hunting After Sunset	41			
% of Hunters Hunting in Goshen County	100.0			

Incomplete survey responses were treated as non-responses. Projected totals are the initial responses plus the nonresponse bias estimators. Non-bias estimation as applied here is the projection of second responses on to nonrespondents.

For example, Active Hunters = (second respondents that hunted/second respondents)(permits analyzed - initial responses)

Source: WGFD unpublished data.

Table 4. Light geese counted during the mid-winter waterfowl survey in Wyoming.

Year	Geese
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	1
1992	0
1993	0
1994	0
1995	0
1996	0
1997	188
1998	3
1999	1
2000	0
2001	1
2002	1
2003	1
2004	2
2005	3
2006	0
2007	1
2008	2
2009	4
2010	3
2011	6

Source: USFWS. Light geese in the CF October 2009. USFWS and WGFD mid-winter survey reports.

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ROCKY MOUNTAIN POPULATION OF GREATER SANDHILL CRANES

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Joe Bohne, Staff Biologist, Larry Roberts, Migratory Game Bird Biologist

RESULTS:

INTRODUCTION

Since 1982, greater sandhill cranes (Grus canadensis tabida) have been hunted during September in the Salt River and Lower Bear River management areas. In 1986, a hunting season was initiated in the Farson area of the Lower Green River and another hunt was initiated in the Riverton Project within the Wind River Basin in 1987. A hunt area was established in Big Horn and Park Counties in 1996. In 2008 another hunt area was established in Uinta County

The crane hunts were started to reduce crop depredations by staging cranes and regulate population growth. Annual harvest levels for Wyoming are prescribed based on a harvest allocation formula in the *Management plan of the Pacific and Central Flyways for the Rocky Mountain Population of Greater Sandhill Cranes*, last revised in March, 2007. Based on shifts in the fall distribution of cranes, a smaller proportion of the crane population has been counted in Wyoming during fall surveys in the past 5 years. Consequently, the harvest allocation available to Wyoming was reduced starting with the 2007 hunting season.

A contingency plan was adopted to protect endangered whooping cranes (*Grus americana*), which occasionally commingle with sandhill cranes on fall staging areas. No whooping cranes have been observed in sandhill crane hunt areas for at least 10 years.

Early September hunting seasons and management recommendations are evaluated in this report.

MANAGEMENT PLAN REVISION

The *Management plan of the Pacific and Central Flyways for the Rocky Mountain Population of Greater Sandhill Cranes* was most recently revised in March 2007. The plan can be found on the Pacific and Central Flyway websites. The plan includes sections on life history, management objectives, population status, habitat status, management and research programs, recommended management procedures, and annual review and monitoring requirements.

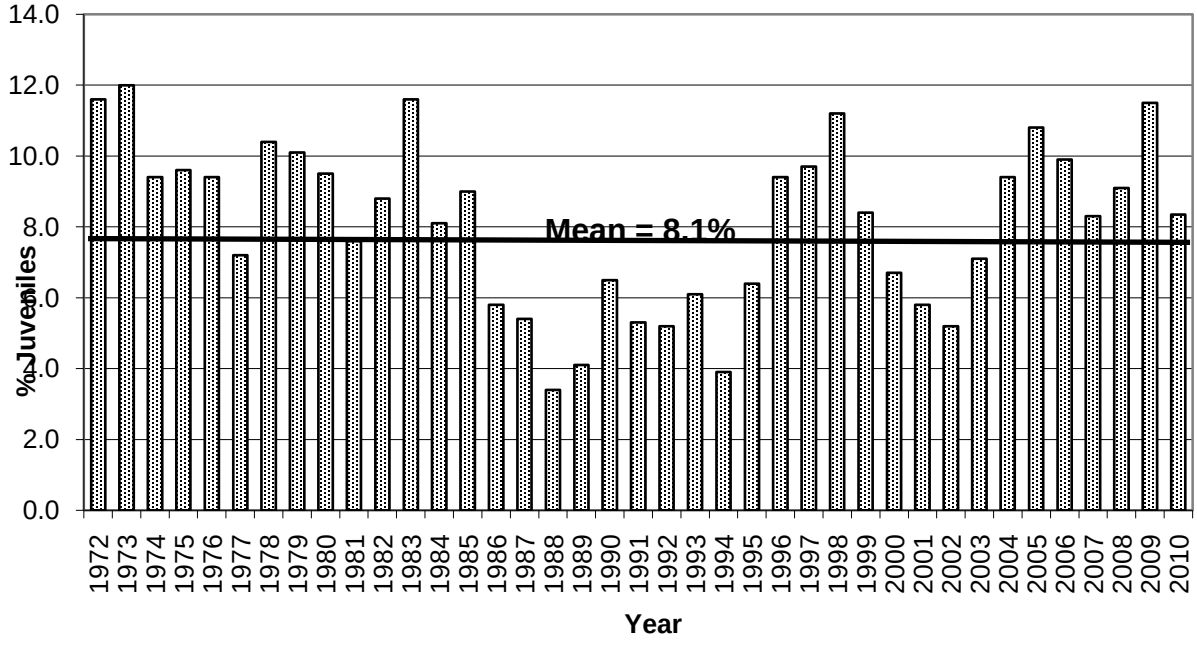
POPULATION STATUS

Survey data from the Rocky Mountain population are summarized in Table 1. The 2006 survey was canceled because the U. S. Fish and Wildlife Service's survey aircraft had mechanical problems. However some surveys were completed by state personnel prior to the decision to cancel the survey by the U. S. Fish and Wildlife Service and those data are reported for the appropriate tables in this report. In 2005, 20,865 cranes were counted. In 2007 a record of 22,822 RMP cranes was counted in 68 locations in the fall migration surveys (Drewin et al. 2009). The survey data suggest the population has been increasing in recent years. The 2007 count exceeded the objective level for this population (stable population index of 17,000-21,000 cranes

determined by an average of the 3 most recent reliable September surveys) set by the Central and Pacific Flyways in the March 2007 revision to the *Management Plan of the Pacific and Central Flyways for the Rocky mountain Population of Greater Sandhill Cranes*. In 2008, a total of 21,156 cranes were counted in the 2 flyways, slightly above the upper limit of the population objective. However, the 2009 survey total of 20, 321 cranes reflected a 4% decline from the previous year. In 2010 the number of cranes counted in pre-migration surveys increased to 21,064 at the upper limit of the objective range.

Annual production is surveyed by classifying the proportion of juveniles in the crane population staging in the San Luis Valley, Colorado in October. The proportion of juveniles was relatively high from 2004 - 2006 (10.0% average). In 2007 the proportion of juveniles declined to 8.3%. In 2008 the proportion of juveniles observed at the San Luis Valley staging area was 9.1% juveniles, compared to 11.5% in 2009 and 8.3% in 2010. The cold wet spring of 2010 in much of the Rocky Mountain West likely is responsible for the drop in crane recruitment. The three -year running average from 2008-2010 was 9.6%, well above the long term mean of 8.1%. Increased recruitment appears to driving population growth in recent years (Table 1, Fig. 1 from Drewin 2010).

Fig. 1. Recruitment (% juv.) in Rocky Mountain Greater Sandhill Cranes, San Luis Valley, Colorado, 1972-2010



SEPTEMBER PRE-MIGRATION STAGING SURVEYS

Results of September pre-migration surveys are summarized in Table 2 (Drewin et al. 2010, Kruse et al 20011). Crane surveys on the primary fall staging areas in Wyoming are summarized in Table 3. The 2006 survey was cancelled due to mechanical problems with the survey aircraft used by the Service to count portions of western Wyoming and southeast Idaho. WGFD personnel completed some sections of the surveys in 2006 but flyway-wide data are incomplete. In 2010, 3,726 cranes were counted in RMP staging areas of central and western Wyoming. This was slightly higher than the number observed in 2009 (3,613) but below the numbers counted in several prior years. The highest crane count in Wyoming was 4,205 in 1999. The data in Table 2 suggest the September crane counts in Wyoming and Montana are increasing while counts in Idaho and Colorado are declining. The number of cranes counted in Utah appears to be relatively stable.

Data from the fall survey indicate crane numbers have declined in the Lower Bear River Valley and Star Valley since 1984. Although counts in both survey areas increased in 2007, they again dropped again in 2008. Numbers increased slightly in Star Valley in 2009 but declined in 2010. In the Bear River Valley crane numbers increased substantially in 2010 (Fig.A1 and A2 from Drewin et al. 2009, Table 1 in Drewin et al. 2010).

Crane counts are conducted in the Pacific flyway (western reference area) in mid-September after the early goose and crane hunting seasons have ended. However, informal late August counts of cranes flying off roosts in the Upper Salt River and the Big Sandy/Eden Reservoirs suggest crane numbers in these two areas may be higher just prior to the hunts. Therefore, the decline in cranes counted during premigration staging surveys in the Salt River and Upper Bear River may not be representative of cranes actually present at the start of the early goose and crane hunts.

Counts fluctuate annually in response to changes in population size, distribution, areas surveyed, and visibility conditions during the counts. Drought conditions adversely affect chick production and survival and ultimately population size. Drought conditions, fall weather patterns, and long-term habitat changes caused by subdivision development and farming practices (changes in grain crop production) affect food availability and habitat selection in staging areas. These changes are thought to result in shifts in the annual and long term distribution of cranes counted in staging areas.

Early hunting seasons are designed to reduce crop depredation by shifting the fall distribution of cranes over time. The limited harvest has minimal impact on numbers of cranes that nest in Wyoming but crane hunts and the concurrent general early goose hunt in the Pacific Flyway portion of Wyoming may account for some changes in fall distribution (Rod Drewien, pers. com., Lockman et al. 1987). Some annual variation is also the result of the observers' ability to see cranes under various light and flying conditions, and whether the birds are aggregated in flocks or widely dispersed in the survey areas. Since the fall survey is a key determinant of the harvest allocation required by the management plan, it is incumbent on all agencies to conduct adequate annual surveys.

Crane numbers have generally increased in the Farson area. A peak count of 1,957 cranes was made in 2008, although the count declined to 1,463 in 2009 and 1,297 in 2010. Counts in the Bighorn Basin have fluctuated but exhibit an overall increasing trend through 2007. The

distribution of staging cranes has also expanded. An area near Worland was added to the Bighorn Basin survey area in 2007. Crane numbers in the Bighorn Basin count blocks declined in 2009, but increased substantially in 2010. A substantial influx of cranes, presumably from Montana, occurs after the surveys are completed in both the Wind River and Bighorn survey areas and in those areas. Crane numbers also increased between 2005 and 2007 in the Hams Fork and Bridger Valleys where few cranes were observed prior to 2000. However, since 2008 counts have remained well below the previous highs and may reflect an avoidance response to very nominal hunting pressure (Table 3).

Fig. A1. Star Valley, WY

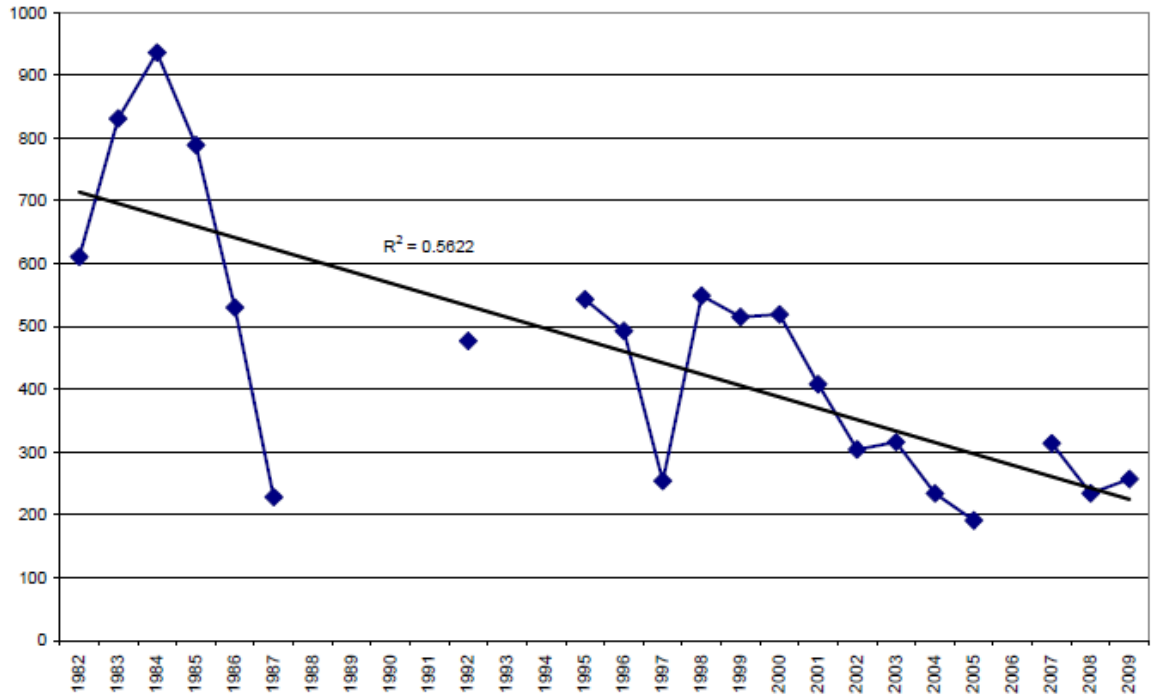
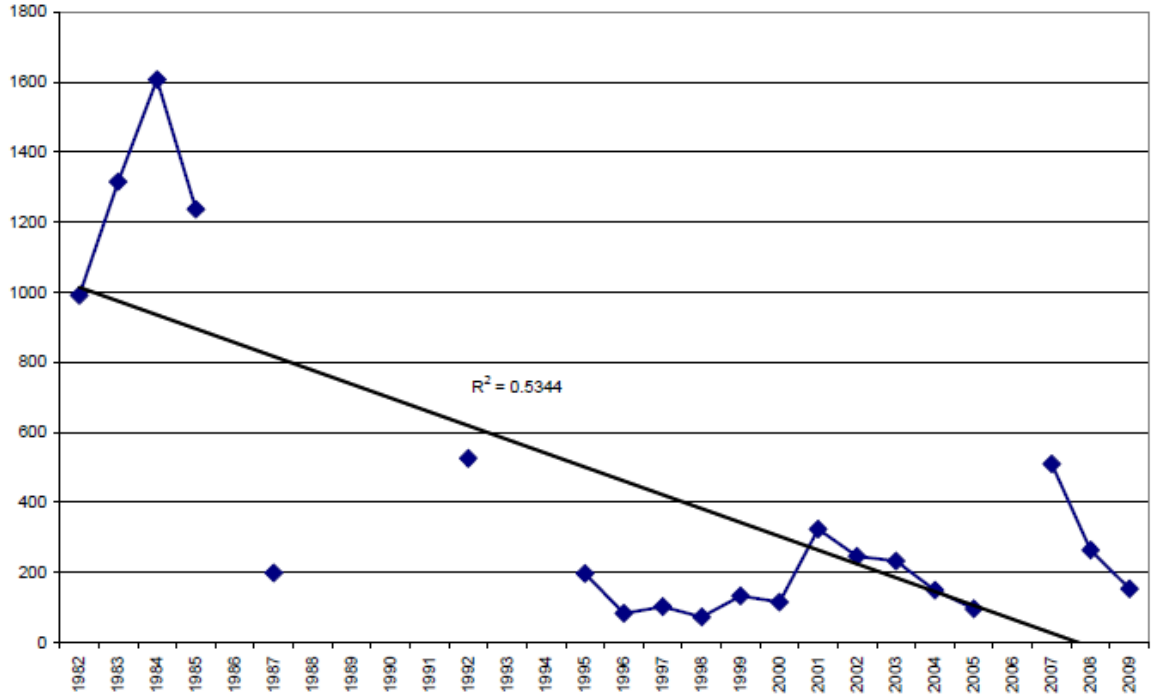


Fig. A2. Bear River Valley, WY



CRANE HARVEST

The Pacific and Central Flyway Management Plan for the Rocky Mountain Population of Sandhill Cranes allows for the regulated harvest of cranes when the population exceeds 15,000, as estimated by the mean of the 3 most recent reliable surveys conducted on the fall pre-migration staging areas. The A prescriptive model is used to allocate annual harvest among states. All the states hunting this population have benefited by the improved population status, which has resulted in an increase in crane permits in 2004-2006. Recent regulations for hunting RMP cranes in Wyoming are summarized in Table 4. The permit allocation in Wyoming increased as a result of an increase in the total fall counts of the Rocky Mountain population and improved recruitment of juveniles into the fall population over the last 4 years.

In 2006, permits were added to all hunt areas reflecting an increasing population and good annual chick recruitment in recent years. Since a complete fall survey was not conducted in 2006, the calculations for the 2007 harvest allocation were essentially the same as the 2006 allocation (1,321). The harvest allocation increased from 1,663 in 2008 to 1,970 in 2010. The calculations for the 2010 allocation are shown in Appendix 1.

Due to declines in the proportion of cranes counted in Wyoming in prior to 2007 , the proportion of harvest allocated to Wyoming was reduced to an allowable harvest of 131 for the 2007 seasons. From 2008 to 2010 the allocation increased from 165 cranes to 197 cranes. Accounting for average hunter success of 50%, the Department issued 395 permits for the 2010 crane seasons.. A summary of the permit allocation by hunt area since 2001 is provided in Table 4.

An experimental hunt area (Uinta County) was added in 2008 with 10 permits to evaluate landowner and hunter response. In the subsequent three seasons crane harvest ranged from 0.25 cranes per hunter to 0.30 cranes per hunter (Table 6). Gaining access to private lands with crane concentrations appears to be an issue as does the limited number of cranes staging in this area.

Boundaries of two other hunt areas were expanded. Area 1 (Bear River drainage in Lincoln County) was enlarged to include the Hams Fork drainage in Lincoln County. It is unclear if the expansion of Hunt Area 1 has met the intended objectives of providing additional hunter opportunity and addressing some depredation issues. Area 6 in the Bighorn Basin was enlarged to include all of Park, Bighorn, Hot Springs and Washakie Counties. Crane harvest has increased in the three subsequent years. Cody Region believes more hunters could be accommodated and landowners perceive crane depredation is increasing (Table 6).

During the 2010 season, 328 hunters harvested 182 cranes in the six hunt areas. Permit success ranged from 20% in Area 2 (Salt River) to 60% in Area 3 (Farson). The harvest rate for active hunters ranged from 0.23 cranes per hunter in Area 2 (Salt River) to 0.74 cranes per hunter in Area 4 (Farson). Hunter success exceeded 50% in the Bear River, Farson, Riverton, and Bighorn Basin hunt areas (Table 5).

Table 6 summarizes crane harvest statistics for Wyoming. The 2010 harvest rate was 0.55 cranes per active hunter compared to 0.64 cranes per hunter in 2009. The harvest rate has ranged from 0.48 cranes per hunter to 0.71 cranes per hunter. The 2001-2010 average harvest rate was 0.60 cranes per hunter. Harvest rates continue to fluctuate in the 6 hunt areas in Wyoming.

Changes in total harvest appear to be a function of permit numbers and crane availability in any given year. Shifts in crane distribution are likely responsible for some reductions in harvest and

hunter success. Land use changes from agriculture to subdivisions, changes in grain crop distribution, and reduced hunter access on private land appear to be factors affecting crane availability and hunter success in some hunt areas, particularly in the Bear River and Star Valley hunt areas.

RECOMMENDATIONS

1. Continue to survey cranes on fall pre-migration staging areas.
2. Continue the mail survey to estimate harvest and hunter activity.
3. Work with the Central and Pacific Flyways to assure Wyoming receives a fair allocation of permits as a result of changes in the RMP Greater Sandhill Crane Management Plan. The allocation protocol in the management plan is intended to be revisited every 5 years and the average of the proportion of cranes counted in each state should be recalculated for the 5 year period from 2007-2011 to set the proportions used in the crane allocation formula for the next 5 years (2012-2016).
4. Continue monitoring to determine if the expansion of hunt area boundaries in the Bighorn Basin (Area 6) and Bear River (Area 1) produce more hunting opportunity and address depredation complaints as crane numbers increase and their fall distribution expands.
5. Continue monitoring to determine if creation of new Hunt Area 5 in Uinta County is creating additional hunting opportunity and addressing depredation complaints as crane numbers increase and their fall distribution expands in Wyoming. Continue reviewing population and harvest data to determine if this hunt area expansion is appropriate and should continue in the future.

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Table 1. Population data for the Rocky Mountain Population of Greater Sandhill Cranes 1997-2010.

Year	September Total Pre-migration	% Juvenile Fall, San Luis Valley	Recruitment rate 5-Year Mean	Total Allowable Harvest
1997	18,036	9.7	8.5	632
1998	18,202	11.2	10.1	693
1999	19,501	8.4	9.9	974
2000	19,990	6.7	8.8	1,141
2001	16,559	5.8	7.0	1,175
2002	18,803	5.2	5.9	833
2003	19,523	7.1	6.0	668
2004	18,510	9.4	7.2	656
2005	20,865	10.8	9.1	906
2006	Cancelled	9.9	10.0	1,321
2007	22,822	8.3	9.7	1,321
2008	21,156	9.1	9.1	1,663
2009	20,321	11.5	9.6	1,939
2010	21,064	8.3	9.4	1,970

Table 2. September pre-migration staging area counts by state of the Rocky Mountain population of greater sandhill cranes during 1987, 1992, 1995-2005, 2007-2010.

Year	Colorado[a]	Idaho	Montana	Utah	Wyoming	Total
1987	1,443	10,686	1,447	1,578	2,327	17,481
1992	3,181	5,801	5,264	2,810	2,248	19,304
1995	2,284	6,864	3,681	1,528	1,671	16,028
1996	1,255	8,334	2,974	1,849	2,526	16,938
1997	1,604	8,132	3,595	2,450	2,255	18,036
1998	1,273	8,067	3,415	2,185	3,162	18,102
1999	1,102	8,761	3,141	2,292	4,205	19,501
2000	749	9,337	3,598	2,416	3,890	19,990
2001	666	7,160	4,585	1,522	2,626	16,559
2002	1,355	7,698	4,843	1,869	3,038	18,803
2003	745	7,822	4,964	2,546	3,446	19,523
2004	1,410	7,152	4,637	2,236	3,072	18,507
2005	1,052	7,668	5,588	2,646	3,911	20,865
2007	1,743	8,262	6,509	2,401	3,907	22,822
2008	1,080	6,123	6,419	3,708	3,826	21,156
2009	1,162	6,934	6,329	2,283	3,613	20,321
2010	985	5,776	7,335	3,242	3,726	21,064
Mean	1,358	7,681	4,607	2,377	3,144	19,117

[a]Colorado counts include migrants that had arrived at the staging area in the San Luis Valley.

Table 3. Surveys of primary fall staging areas used by the RMP of greater sandhill cranes in Wyoming, 2005-2010.

Primary Staging Area	Responsible Agency	Year and (Survey Date)	Total Count (Aerial or Ground)
Lower Bear River Valley	USFWS		
		2006	NS
		2007 (9/10)	510(Aerial)
		2008 (9/15)	264 (aerial)
		2009 (9/15)	153 (Aerial)
		2010 (9/13)	488 (Aerial)
Star Valley (Salt River)	USFWS		
		2006	NS
		2007 (9/12)	314 (Aerial)
		2008 (9/16)	234 (Aerial)
		2009 (9/17)	257 (Aerial
		2010 (9/17)	127 (Aerial)
Farson-Eden	USFWS		
		2006	NS
		2007(9/13)	1,431(Aerial)
		2008(9/15)	1,957 (Aerial)
		2009 (9/14)	1,463 (Aerial)
		2010 (9/14)	1,297 (Aerial)
Boysen-Riverton (Wind River)	WGFD		
		2006 (9/12)	269 (Aerial)
		2007 (9/12)	433 (Aerial)
		2008 (9/16)	133 (Aerial)
		2009 (9/17)	345(Aerial)
		2010 (9/14)	235 (Aerial)
Greybull River Valley	WGFD		
		2006 (9/12)	365 (Aerial)
		2007 (9/12)	374 (Aerial)
		2008 (9/16)	481 (Aerial)
		2009 (9/16)	283 (Aerial)
		2010 (9/14)	454 (Aerial)
Shoshone River Valley	WGFD		
		2006 (9/12)	822 (Aerial)
		2007 (9/12)	386 (Aerial)
		2008 (9/16)	196 (Aerial)
		2009 (9/16)	389 (Aerial)
		2010 (9/14)	470 (Aerial)

Table 3. Continued			
	Responsible	Year and	Total Count
Primary Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Worland	WGFD		
		2006	NS
		2007 (9/12)	24 (Aerial)
		2008 (9/16)	201 (Aerial)
		2009 (9/16)	215(Aerial)
		2010 (9/14)	322 (Aerial)
Big Piney	USFWS		
		2006	NS
		2007 (9/13)	46 (Aerial)
		2008 (9/15)	138(Aerial)
		2009 (9/14)	91 (Aerial)
		2010 (9/14)	76 (Aerial)
Bridger Valley	WGFD		
		2006 (9/15)	159 (Ground)
		2007 (9/12)	116 (Ground)
		2008 (9/16)	42 (Ground)
		2009 (9/15)	51 (Ground)
		2010 (9/15)	75 (Ground)
Lonetree	WGFD		
		2006	NS
		2007 (9/14)	50 (Ground)
		2008	NS
		2009	NS
		2010 (9/15)	0 (Ground)

Table 3. Continued	Responsible	Year and	Total Count
Primary Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Hams Fork	USFWS		
		2006	NS
		2007 (9/10)	149 (Aerial)
		2008 (9/15)	51 (Aerial)
		2009 (9/14)	90 (Aerial)
		2010 (9/13)	18 (Aerial)
Little Snake River Valley	WGFD		
		2006 (9/13)	0 (Ground)
		2007 (9/10)	2 (Ground)
		2008 (9/16)	0 (Ground)
		2009 (9/17)	2 (Ground)
		2010 (9/15)	0 (Ground)
Pinedale-Cora	USFWS		
		2006	NS
		2007 (9/13)	8 (Aerial)
		2008 (9/15)	0 (Aerial)
		2009 (9/14)	45 (Aerial)
		2010 (9/14)	2 (Aerial)
Seedskadee NWR	USFWS		
		2006	NS
		2007 (9/13)	0 (Ground)
		2008 (9/15-9/16)	0 (Ground)
		2009 (9/15-9/16)	4 (Ground)
		2010 (9/15)	4 (Ground)
Upper North Platte River	WGFD		
		2006 (9/13)	24 (Ground)
		2007 (9/13)	0 (Ground)
		2008 (9/16)	11 (Ground)
		2009 (9/17)	5 (Ground)
		2010 (9/15)	26 (Ground)
Jackson Hole	Jackson Hole		
	Bird Club		
		2006	NS
		2007 (9/11-9/12)	64 (Ground)
	USF&WS	2008 (9/18)	118 (Ground)
	USF&WS	2009 (916)	220 (Ground)
	USF&WS	2010 (9/15)	132 (Ground)

Table 4. Recent hunting regulations for the RMP of sandhill cranes.

	YEAR									
HUNT AREA	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1 Bear River										
No. Permits	45	35	30	20	26	42	25	30	30	30
Season Dates (Sept.)	1-14	1-14	1-14	1-14	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
2 Salt River										
No. Permits	60	40	30	20	26	42	26	25	31	30
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
3 Eden/Farson										
No. Permits	65	55	45	45	56	94	60	85	106	105
Season Dates (Sept.)	1-7	1-7	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
4 Riverton										
No. Permits	60	55	45	60	70	116	75	85	100	105
Season Dates (Sept.)	16-30	21-30	20-30	18-30	17-30	16-30	16-30	13-30	13-30	18-30
Season Dates (Oct.)	1-5	1-11	1-10	1-8	1-7	1-6	1-8	1-8	1-3	1-10
Season Limit	1	1	1	1	1	1	1	1	1	1
5 Uinta										
No. Permits								10	10	10
Season Dates (Sept.)								1-8	1-8	1-8
Season Limit								1	1	1
6 Big Horn/Park										
No. Permits	65	55	45	60	74	124	80	95	110	115
Season Dates (Sept.)	15-30	21-30	20-30	18-30	17-30	16-30	15-30	13-28	13-28	18-30
Season Dates (Oct.)	1	1-6	1-8	1-8	1-2	1				1-3
Season Limit	1	1	1	1	1	1	1	1	1	1

Source: WGFD. Early migratory game bird hunting regulations.

Table 5. Harvest and hunter activity for the 2010 hunting season for RMP of greater sandhill cranes.

	HUNT AREA						
	1	2	3	4	5	6	TOTALS/
	BEAR RIVER	SALT RIVER	FARSON	RIVERTON	Uinta	BIG HORN	AVERAGES
Harvest Allocation							197
Permits Issued	30	30	105	105	10	115	395
Active Hunters	20	26	85	91	10	96	328
Total Days Hunted	33	109	151	196	13	193	695
Days/Active Hunter	1.7	4.2	1.8	2.2	1.3	2.0	2.1
Adult Harvest	9	2	54	37	0	39	141
Juvenile Harvest	2	4	9	9	3	14	41
Unknown Age Harvest	0	0	0	0	0	0	0
Total Crane Harvest	11	6	63	46	3	53	182
Cranes per Active Hunter	0.55	0.23	0.74	0.51	0.30	0.55	0.55
Permit Success	37%	20%	60%	44%	30%	46	46%
Cranes Knocked Down but not Retrieved	2	0	2	4	0	2	10

Note: Due to rounding and computer decimal loads, area estimates may not equal totals.

Source: WGFD unpublished data.

Table 6. Harvest statistics from RMP Greater Sandhill Crane hunts in Wyoming 2001-2010.

					YEAR					
HUNT AREA	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1 Bear River										
No. Hunters	38	33	24	15	24	18	21	27	24	20
Hunter Days	69	48	52	29	47	27	44	51	46	33
Days/Hunter	2000	1.3	2.2	1.9	2	1.5	2.1	1.9	1.9	1.7
Harvest	20	16	4	12	14	12	9	17	18	11
Cranes/Hunter	0.53	0.48	0.17	0.76	0.58	0.67	0.43	0.63	0.75	0.55
2 Salt River										
No. Hunters	47	32	18	15	23	30	11	22	22	26
Hunter Days	118	84	49	48	59	87	29	45	54	109
Days/Hunter	2.5	2.7	2.7	3.3	2.6	3	2.6	2.1	2.5	4.2
Harvest	13	7	4	7	10	12	8	10	8	6
Cranes/Hunter	0.28	0.22	0.21	0.46	0.43	0.42	0.7	0.45	0.36	.23
3 Eden/Farson										
No. Hunters	53	53	38	35	43	73	54	69	83	85
Hunter Days	98	94	62	65	82	135	103	137	152	151
Days/Hunter	1.9	1.8	1.6	1.9	1.9	1.9	1.9	2	1.8	1.8
Harvest	40	35	18	24	31	58	42	37	46	63
Cranes/Hunter	0.75	0.66	0.47	0.68	0.72	0.79	0.77	0.54	0.55	0.74
4 Riverton										
No. Hunters	52	44	33	55	48	83	65	70	73	91
Hunter Days	93	95	71	91	90	155	118	121	133	196
Days/Hunter	1.8	2.2	2.1	1.6	1.9	1.9	1.8	1.7	1.8	2.2
Harvest	35	34	27	37	28	55	45	45	58	46
Cranes/Hunter	0.67	0.77	0.83	0.66	0.58	0.66	0.69	0.64	0.79	0,51
5 Uinta										
No. Hunters								10	8	10
Hunter Days								20	22	13
Days/Hunter								2	2.8	1.3
Harvest								3	2	3
Cranes/Hunter								0.30	0.25	0.30
6 Big Horn										
No. Hunters	58	48	39	54	58	101	62	83	93	96
Hunter Days	184	116	114	110	152	276	124	191	217	192
Days/Hunter	3.2	2.4	2.9	2.1	2.6	2.6	2	2.3	2.3	2.0
Harvest	35	40	19	44	33	57	35	50	6.3	53
Cranes/Hunter	0.60	0.83	0.50	0.82	0.57	0.56	0.56	0.60	0.68	0.55

HUNT AREA	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TOTAL										
Harvest Allocation	170	132	106	104	144	209	131	165	192	197
Permits Issued	298	242	195	206	254	401	266	330	387	395
No. Hunters	248	210	152	174	196	305	213	281	303	328
Hunter Days	563	437	348	343	430	687	418	562	624	695
Days/Hunter	2.3	2.1	2.3	2.0	2.2	2.3	2.0	2	2.1	2.1
Harvest	142	132	72	124	116	194	138	162	195	182
Cranes/Hunter	0.57	0.63	0.48	0.71	0.59	0.64	0.65	0.58	0.64	0.55

Appendix 1. 2010 RMP Sandhill Crane Harvest Allocation

2010 Crane Harvest Allocation

Allowable Harvest = C x P x R x L x f where: C = Avg of **3** most recent, reliable **fall** population indices.
P = Avg proportion fledged chicks in **3** most recent years
R = 0.5 (estimated recruitment fledged chicks to breeding)
L = 0.8 (retrieval rate)
f = $(C/16{,}000)^3$ (harvest rate adjustment)

$C = \frac{22.822 + 21{,}156 + 20321}{3} = 21{,}433$

$P = \frac{0.083 + 0.091 + 0.096}{3} = 0.096$

$f = (C/16{,}000)^3 = (21{,}433/16{,}000)^3 = 2.404$

2010 Harvest Allocation = 21,433 x 0.096 x 0.5 x 0.8 x 2.404 = **1,979**
2009 Harvest Allocation = 21,614 x 0.091 x 0.5 x 0.8 x 2.465 = **1,939**
2008 Harvest Allocation = 20,577 x 0.095 x 0.5 x 0.8 x 2.127 = **1,663**
2007 Harvest Allocation = 19,633 x 0.091 x 0.5 x0.8 x 1.848 = **1,321**
2006 Harvest Allocation = 19,633 x 0.091 x 0.5 x 0.8 x 1.848 = **1,321**
2005 Harvest Allocation = 18,945 x 0.072 x 0.5 x 0.8 x 1.660 = **906**
2004 Harvest Allocation = 18,295 x 0.060 x 0.5 x 0.8 x 1.494 = **656**

2007 Allocation based on 2003, 2004, and 2005 fall count
2008 Allocation based on 2004, 2005, and 2007 fall count
2009 Allocation based on 2005,2007, and 2008 fall count
2010 Allocation based on 2007, 2008 and 2009 fall count

	Summer Range	Winter Range	Unused Colorado	Base Allocation Percent	Base Allocation		Total Allocation
Colorado	2.70 %	5.80 %	---	8.5%	168	0	**0**
Idaho	22.00 %	---	(1.14%)	22.00 %	435	435+23	**458**
Montana	14.30 %	---	(0.76%)	14.30 %	283	283+15	**298**
Wyoming	9.40 %	---	(0.53%)	9.40 %	186	186+11	**197**
Utah	6.60 %	2.70 %	(0.76%)	9.30 %	184	184+15	**199**
Arizona	---	5.80 %	(0.83%)	5.80 %	115	115+16	**131**
New Mexico	---	28.00 %	(4.01%)	28.00 %	554	554+79	**633**
Mexico	---	2.70 %	(0.46%)	2.70 %	54	54+9	**63**
TOTALS	55.00 %	45.00 %	8.49%	100 %	1,979		1**,979**

*** Numbers in bold based on no hunt will occurring in Colorado in 2010. Colorado's winter allocation has been divided between winter range states and Colorado's summer allocation has been divided between summer range states.**

MID-CONTINENT POPULATION OF SANDHILL CRANES

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

SURVEYS

Few cranes in this population nest in Wyoming and they do not consistently stage in here in significant numbers. Most of the migration bypasses Wyoming to the east. Accordingly, the Department does not conduct surveys of mid-continent sandhill cranes. Some flocks migrate through eastern WY and provide largely incidental hunting opportunities. The MCP crane population has remained stable and within established management objectives.

CRANE HARVEST

Recent hunting regulations and harvest statistics for mid-continent sandhill cranes are summarized in Table 1. During the 2010 season, 23 sandhill cranes were harvested. These cranes typically migrate through Wyoming in a few days and do not stage in predictable concentrations. The timing of migration varies from year to year. Consequently, most hunting is opportunistic.

During the 2009 hunting season, Wyoming was allowed to expand the hunt area to include that portion of Johnson County east of Interstate Highway 25 from the Natrona County line north to Interstate Highway 90 and east of Interstate Highway 90 from the intersection with Interstate Highway 25 to the Sheridan County line; and that portion of Sheridan County east of Interstate Highway 90.

There is concern that the crane harvest in the expanded hunt area would include an unknown proportion of sandhill cranes from the RMP of greater sandhill cranes. Wyoming was not required to check subspecies composition in the field, but the Department was asked to track hunter activity and harvest. Although there was limited hunter activity in Sheridan County, no crane harvest was reported in Johnson or Sheridan counties during the 2010 season (Table 2).

RECOMMENDATIONS

1). Continue the season structure as it presently exists.

2). Continue monitoring and reporting the crane harvest in Johnson and Sheridan counties.

Table 1. Harvest statistics for recent hunting seasons for Mid-continent sandhill cranes.

YEAR	NUMBER OF PERMITS ISSUED	NUMBER OF ACTIVE HUNTERS	RETRIEVED HARVEST	SEASON DATES	TOTAL DAYS
2001	72	13	7	09/15 - 11/11	58
2002	54	15	22	09/14 - 11/10	58
2003[a]	50	10	7	09/13 - 11/09	58
2004[a]	61	16	4	09/18 - 11/14	58
2005[a]	68	24	16	09/17 - 11/13	58
2006[a]	78	25	20	09/16 - 11/12	58
2007[a]	58	19	20	09/15 - 11/11	58
2008[a]	73	24	24	09/13 - 11/9	58
2009[a]	62	67	8	09/19 - 11/15	58
2010[a]	86	29	23	09/18 - 11/14	58
TEN-YEAR AVERAGE	66	24	15		

[a] Preliminary

Source: USFWS. Status and harvest of sandhill cranes; mid-continent and Rocky Mountain populations, 2011.

Table 2. Harvest statistics for Area 7 hunting of Mid-continent sandhill cranes, 2010.

County	NUMBER OF PERMITS ISSUED	ACTIVE CRANE HUNTERS[a]	NUMBER OF DAYS AFIELD	RETRIEVED HARVEST
Cambell		2	9	0
Converse		0	0	0
Crook		0	0	0
Goshen		8	26	11
Johnson		0	0	0
Laramie		0	0	0
Niobrara		0	0	0
Platte		12	26	12
Sheridan		4	11	0
Weston		0	0	0
Unknown		0	0	0
TOTAL	86	26	72	23

Source: USFWS. Division of Migratory Bird Management, Branch of Harvest Surveys, 2011.

[a] Totaling the individual courty numbers results in more hunters than indicated in the total number of hunters, some hunters hunted in more than one county.

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CENTRAL MANAGEMENT UNIT OF MOURNING DOVES

PERIOD COVERED: September 1, 2010- August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

CALL COUNT SURVEY

Call-counts have been the chief index used to monitor mourning dove population status throughout the U.S. since 1953. The entire state of Wyoming is within the Central Management Unit (CMU). Fourteen states comprise the CMU.

During the 2010 and 2011 surveys, Kansas, Nebraska, North Dakota and South Dakota had the highest average numbers of doves heard per route (range 40.4 to 49.9). Nationally, the highest average counts are often from Kansas and South Dakota. Wyoming was the only state averaging fewer than 10 doves heard per route. The remaining states reported intermediate numbers of doves heard.

Based on call frequency data, dove abundance has declined in the CMU over the last 10 years and over the last 46 years. Oklahoma and Texas are the only individual states with decreases over the most recent 10 year period. During the 46-year period, no state had an increase in dove abundance. In Minnesota, Missouri, Montana, Nebraska, Oklahoma, Texas, and Wyoming, dove abundance decreased over the 46-year period.

GPS locations of call-count survey (CCS) routes in Wyoming are shown in Figure 5. Results of the 10 most recent call-count surveys are summarized in Table 1. This information is forwarded annually to the Office of Migratory Bird Management in Laurel, Maryland. Results are compiled in an Administrative Status Report available to the public by late July. In 2011, the numbers of doves heard and seen per mile were below the 10-year average. The number of routes surveyed was lower than the 10-year average.

TRAPPING AND BANDING STUDIES

The National Mourning Dove Task Force recommended all states not currently banding mourning doves begin a banding program in 2008. Regional banding data provides specific population information for each management unit to support implementation of both the Mourning Dove National Strategic Harvest Management Plan and relevant interim harvest strategies. In 2004, the USFWS SRC required a mourning dove harvest management strategy for each management unit. Wyoming was requested to band 153 after hatching year (AHY) and 116 hatching year (HY) (269 total) mourning doves each year for an indefinite number of years.

In 2011, allocation of available fiscal and personnel resources to address other Department priorities precluded all migratory game bird banding. Banding of mourning doves in Wyoming has been suspended indefinitely.

HARVEST

Weather conditions in late August and early September greatly influence dove harvest in Wyoming. Weather conditions were moderate in 2010 and flocks of doves remained in the state throughout September and most of October.

The dove harvest and the number of hunters increased in 2010 compared to the year prior (Table 2). The number doves harvested per hunter was below the most recent 10-year average. We continue to rely on State harvest estimates, as confidence intervals of HIP-derived estimates for hunter activity and harvest continue to be excessively wide (Table 3).

RECOMMENDATIONS

1. Continue to conduct 18 mourning dove call-count routes in Wyoming.

2. Maintain historic hunting opportunity.

3. If resources allow, participate in the national dove banding program.

Figure 5. Locations of mourning dove call-count survey routes in Wyoming.

Table 1. Average number of mourning doves heard and seen during call-count surveys, 2002-2011.

Year	Doves Heard	Doves Seen	Routes Run
2002	11.7	8.8	13
2003	8.3	8.1	15
2004	9.7	4.1	15
2005	6.8	2.5	16
2006	11.8	6.9	18
2007	10.1	4.1	15
2008	16.1	7.5	17
2009	12.7	5.2	17
2010	8.2	3.2	17
2011	7.2	3.4	15
Ten-Year Average	10.3	5.4	16

Total number of routes to survey per year was 18.

Source: USFWS CCS Data and Wyoming Migratory Bird Completion Reports.

Table 2. Statewide mourning dove harvest in Wyoming.

YEAR	HUNTERS	HUNTER DAYS	DAYS/ HUNTER	DOVE HARVEST	DOVES/ HUNTER	BAG/ POSSESSION	SEASON LENGTH (DAYS)
2001	2,807	8,371	2.98	29,075	10.36	15/30	60
2002	2,648	14,470	5.46	36,431	13.76	15/30	60
2003	2,078	5,978	2.88	27,837	13.40	15/30	60
2004	2,471	7,645	3.09	32,142	13.01	15/30	60
2005	3,194	9,080	2.84	44,280	13.86	15/30	60
2006	2,461	7,141	2.90	32,807	13.33	15/30	60
2007	2,351	8,256	3.51	36,670	15.60	15/30	60
2008	2,315	7,482	3.23	29,994	12.96	15/30	60
2009	1,949	5,598	2.87	22,278	11.43	15/30	60
2010	2,528	8,096	3.20	28,906	11.43	15/30	70
TEN-YEAR AVERAGE	2,480	8,212	3.30	32,042	12.91		

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2002-2011.

Table 3. HIP estimates of mourning dove harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	DOVE HARVEST	HARVEST/ HUNTER
2001	3,300+/-35%	8,000+/-41%	2.42	29,200+/-24%	8.9 +/- 43%
2002	2,800+/-30%	6,200+/-35%	2.21	30,300+/-47%	10.8 +/- 56%
2003[a]	3,000+/-40%	7,400+/-49%	2.47	39,600+/-76%	13.1+/-86%
2004[a]	3,200+/-27%	8,700+/-34%	2.72	43,700+/-46%	13.7+/-53%
2005[a]	2,500+/-27%	6,600+/-27%	2.64	34,100+/-31%	13.6+/-41%
2006[a]	2,300+/-29%	6,500+/-36%	2.83	29,500+/-37%	12.9+/-47%
2007[a]	4,000+/-20%	8,800+/-24%	2.20	42,600+/-27%	10.6+/-33%
2008[a]	2,500+/-25%	5,900+/-33%	2.36	30,100+/-36%	11.9+/-44%
2009[a]	2,300+/-27%	5,800+/-31%	2.52	20,600+/-31%	8.8+/-41%
2010[a]	2,700+/-26%	7,100+/-32%	2.63	32,100+/-36%	12.0+/-45%
TEN-YEAR AVERAGE	2,860	7,100	2.50	33,180	11.63

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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CENTRAL MANAGEMENT UNIT OF COMMON SNIPE

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the most recent data from the North American breeding bird survey, snipe populations increased in Wyoming, declined in the United States, and were stable in Canada from 1966-2009.

HARVEST

Snipe hunting and harvest in Wyoming have varied markedly during the past 10 years (Table 1). The WGFD discontinued the state survey of snipe harvest and hunter activity after 2009. Confidence intervals of HIP-derived estimates continue to be excessively wide (Table 2).

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

2. Continue to support wetlands projects that provide habitat for common snipe.

Table 1. Snipe harvest and hunter activity in Wyoming during the most recent 10-year period.

YEAR	HUNTERS	HUNTER DAYS	DAYS/ HUNTER	SNIPE HARVEST	SNIPE/ HUNTER	BAG/ POSSESSION LIMITS	SEASON LENGTH (DAYS)
2000	164	386	2.35	425	2.59	8/16	107
2001	76	233	3.07	331	4.36	8/16	107
2002	126	508	4.03	179	1.42	8/16	107
2003	120	271	2.26	287	2.39	8/16	107
2004	106	255	2.41	221	2.08	8/16	107
2005	207	769	3.71	522	2.52	8/16	107
2006	191	504	2.64	532	2.79	8/16	107
2007	89	269	3.02	334	3.75	8/16	107
2008	175	612	3.50	403	2.30	8/16	107
2009	75	147	1.96	320	4.27	8/16	107
AVERAGES	133	395	2.89	355	2.85		

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2001-2010.

Table 2. HIP estimates of snipe harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	SNIPE HARVEST	SEASONAL SNIPE HARVEST/ HUNTER
2001	100+/-171%	300+/-161%	3.00	440+/-147%	3.7+/-225%
2002	400+/-79%	700+/-73%	1.75	1,600+/-99%	4.4+/-127%
2003[a]	200+/-92%	400+/-92%	2.00	800+/-143%	3.8+/-170%
2004[a]	300+/-74%	500+/-66%	1.67	400+/-68%	1.4+/-101%
2005[a]	100+/-102%	300+/-90%	3.00	400+/-152%	2.8+/-183%
2006[a]	100+/-142%	300+/-174%	3.00	100+/-170%	1.7+/-222%
2007[a]	100+/-172%	100+/-136%	1.00	200+/-182%	2.8+/-250%
2008[a]	100+/-130%	200+/-109%	2.00	300+/-133%	1.8+/-186%
2009[a]	<50+/-71%	<50+/-92%	1.00	100+/-94%	6.8+/-118%
2010[a]	400+/-89%	600+/-92%	1.50	1,200+/-129%	3.2+/-157%
AVERAGES	185	345	1.99	554	3.22

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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CENTRAL MANAGEMENT UNIT OF VIRGINIA AND SORA RAILS

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Populations of Virginia rail have declined in some locations, particularly the Midwest where wetland losses and degradation have been severe. Based on the most recent data from the North American breeding bird survey, Virginia rail populations have generally increased in the United States and Canada, but decreased in Wyoming, from 1966-2009. During the same period, sora rails increased in Wyoming and the United States, but decreased in Canada. Soras are the most abundant and widely distributed of the North American rails.

HARVEST

Rail harvest and hunting in Wyoming remained low during the past 10 years (Table 1). The WGFD discontinued the state survey of rail harvest and hunter activity after 2009. Confidence intervals of HIP-derived harvest estimates continue to be excessively wide (Table 2).

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

2. Continue to support wetlands projects that provide habitat for rails.

Table 1. Rail harvest and hunter activity in Wyoming during the most recent 10-year period.

YEAR	HUNTERS	HUNTER DAYS	DAYS/ HUNTER	RAIL HARVEST	RAIL/ HUNTER	BAG/ POSSESSION LIMITS	SEASON LENGTH (DAYS)
2000	42	77	1.83	36	0.86	25/25	70
2001	5	19	3.80	70	14.00	25/25	70
2002	0	0	0.00	0	0.00	25/25	70
2003	24	66	2.75	37	1.54	25/25	70
2004	31	63	2.03	5	0.16	25/25	70
2005	90	168	1.87	74	0.82	25/25	70
2006	22	80	3.64	20	0.91	25/25	70
2007	41	75	1.83	12	0.29	25/25	70
2008	80	391	4.89	36	0.45	25/25	70
2009	10	42	4.20	8	0.80	25/25	70
AVERAGE	35	98	2.68	30	1.98		

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2001-2010.

Table 2. HIP estimates of rail harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	RAIL HARVEST	SEASONAL RAIL HARVEST/ HUNTER
2001	<50+/-160%	<50+/-160%	1.00	<50+/-160%	5.0+/-266%
2002	0		0.00	0	0.0
2003[a]	0	0	0.00	0	0
2004[a]	<50+/-153%	<50+/-153%	1.00	<50+/-153%	1.0+/-216%
2005[a]	0	0	0.00	0	0
2006[a]	0	0	0.00	0	0
2007[a]	0	0	0.00	0	0
2008[a]	<50+/-160%	<50+/-160%	1.00	<50+/-160%	1.0+/-227%
2009[a]	0	0	0.00	0	0
2010[a]	<50+/-155%	<50+/-155%	0.00	0	0
AVERAGE	20	20	0.30	15	0.70

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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AMERICAN COOT POPULATION

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the most recent data from the North American breeding bird survey, the coot population decreased in Wyoming and Canada, and increased throughout the United States from 1966-2009.

HARVEST

The number of coot hunters, harvest, and hunter days increased last year (Table 1). The WGFD discontinued the state survey of American coot harvest and hunter activity after 2009. For the most part, coots are not actively hunted in Wyoming and most harvest is incidental to other types of waterfowl hunting. Confidence intervals of HIP-derived estimates continue to be excessively wide (Table 2). Ten-year averages of hunter numbers and harvest are similar between the two surveys. .

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

Table 1. Coot harvest and hunter activity in Wyoming during the most recent 10-year period.

YEAR	HUNTERS	HUNTER DAYS	DAYS/ HUNTER	COOT HARVEST	COOTS/ HUNTER
2000	75	232	3.09	249	3.32
2001	134	303	2.26	353	2.63
2002	52	209	4.02	123	2.37
2003	113	525	4.65	463	4.10
2004	113	718	6.35	279	2.47
2005	143	412	2.88	163	1.14
2006	133	623	4.68	691	5.20
2007	143	1,068	7.47	660	4.62
2008	145	362	2.50	182	1.26
2009	102	551	5.40	107	1.05
AVERAGE	115	500	4.33	327	2.81

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2001-2010.

Table 2. HIP estimates of coot harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	COOT HARVEST	SEASONAL COOT HARVEST/ HUNTER
2001	100+/-165%	100+/-138%	1.00	300+/-114%	3.1+/-201%
2002	100+/-180%	400+/-189%	4.00	500+/-182%	6.9+/-255%
2003[a]	200+/-102%	400+/-138%	2.00	200+/-147%	1.3+/-179%
2004[a]	100+/-161%	100+/-153%	1.00	200+/-119%	2.9+/-200%
2005[a]	100+/-194%	100+/-194%	1.00	100+/-194%	1.0+/-275%
2006[a]	100+/-125%	500+/-171%	5.00	900+/-179%	9.4+/-219%
2007[a]	<50+/-166%	<50+/-166%	1.00	<50+/-166%	1.0+/-234%
2008[a]	200+/-111%	200+/-111%	1.00	200+/-195%	1.0+/-224%
2009[a]	<50+/-106%	<50+/-112%	1.00	<50+/-195%	4.5+/-154%
2010[a]	200+/-127%	200+/-108%	1.00	600+/-115%	3.3+/-171%
AVERAGE	120	210	1.80	310	3.44

Source: USFWS. HIP final and preliminary[a] harvest estimates.

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AMERICAN CROW

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the North American breeding bird survey trend results, crows have increased from 1996-2009 in Wyoming and throughout the United States, but decreased in Canada.

HARVEST

Recent crow seasons are summarized in Table 1. The crow harvest and hunter activity are unknown in Wyoming. Since a license is not required to hunt crows, there is no means to identify a sample frame for a harvest survey. The limited hunting that takes place has had essentially no impact on crow populations overall.

RECOMMENDATIONS

1. Maintain hunting opportunity for recreation and to assist with depredation control.

Table 1. Recent crow hunting seasons in Wyoming.

YEAR	SEASON DATES	BAG/POSSESSION LIMITS
2001	November 1 - February 28	None/None
2002	November 1 - February 28	None/None
2003	November 1 - February 28	None/None
2004	November 1 - February 28	None/None
2005	November 1 - February 28	None/None
2006	November 1 - February 28	None/None
2007	November 1 - February 28	None/None
2008	November 1 - February 28	None/None
2009	November 1 - February 28	None/None
2010	November 1 - February 28	None/None

Source: WGFD, Migratory Game Bird Regulations.

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TRUMPETER AND TUNDRA SWAN POPULATIONS

PERIOD COVERED: September 1, 2010- August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

The waterfowl section expends substantial time addressing swan issues, especially through the Flyway process. However, the Nongame section oversees the trumpeter swan program. Swans are not hunted in Wyoming. Refer to Nongame completion reports for swan information.

During November, 2011 multiple flocks of tundra swans were observed migrating and resting on the Department's WHMAs in Goshen County. Although small numbers of swans (typically groups of 2-3) have been observed sporadically in past years, the numbers seen in 2011 were distinctly greater. Flocks ranged from 10-20 swans and were suggestive of a migration pattern.

WATERFOWL NESTING STRUCTURES

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

It is our intent to complete a comprehensive inventory report for inclusion in the 2012 JCR. The report will contain an inventory of structures and their condition in each region, including use by waterfowl and recent and anticipated structure maintenance and management.

RECOMMENDATION:

1. Continue to update goose structure database.

2. Complete the nesting structure status report.

3. Retain a manageable number of effective structures and provide adequate maintenance.

BUMP-SULLIVAN MANAGED GOOSE HUNT

PERIOD COVERED: September 1, 2010 - August 31, 2011

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

INTRODUCTION

Springer/Bump-Sullivan Reservoir and Table Mountain Wildlife Habitat Management Areas (WHMA) are the principal public goose hunting areas in Goshen County. The Bump-Sullivan area has been a popular goose hunting area for over 50 years. A Managed Goose Hunt was begun there during the 1993-94 season.

The WGFD and Wyoming goose hunters cooperatively developed a hunt plan for Bump-Sullivan Reservoir. Permits to hunt on weekends and holidays have been issued through a drawing conducted before the season. Weekday hunting was based on daily drawings. Most participants in the hunt have been very satisfied. The Goshen County 2-Shot Goose Committee constructed the pits with materials supplied by the WGFD. Other volunteers have assisted with pit installation and maintenance over the years. The Bump-Sullivan Managed Goose Hunt also relies on assistance from personnel at the Downar Bird Farm.

Bump-Sullivan Reservoir is part of the Springer WHMA. Twelve pits are located on the reservoir and 4 pass-shooting pits on Springer WHMA. The 4 pits on the Springer WHMA are available on a first-come, first-serve basis. The 12 pits on the reservoir are allocated to hunters through a drawing. All hunters must register at the check station operated daily on the Springer WHMA

Several modifications have been made to the Hunt since 1993. In 1994, an additional pass-shooting pit brought that total to 4 and 16 pits in all. In 2002, the Managed Goose Hunt was suspended because Bump-Sullivan Reservoir was dry. In 2010, the Hunt was reinstated, with no pre-season permits being issued and 3 additional layout hunting locations on Springer WHMA. There were 19 hunting locations available to participants. High water in the reservoir flooded all 12 pits and caused some wear and tear on the wooded structures.

RESULTS

The winter of 2010-11 was nearly normal in the Central Flyway and good numbers of Canada geese were in Goshen County throughout the dark goose season. However, a large proportion of the birds stayed in the North Platte River Valley. This shift in distribution was possibly due to drought and low water levels at all reservoirs in southern Goshen County during the previous decade.

All but hunting locations 15 and 18 were occupied at least once (Table 1) during the 2010-11 season. The number of hunters, the number of days pits were occupied and dark goose harvest were the lowest recorded since inception of the hunt. Pits 3 and 7 were the most popular pits, while pit 6 had the highest harvest and harvest rate per hunter. In the 1990's, pit 11 was very popular with hunters but it was only hunted once in the early part of the regular goose season in 2010.

In 2010-11, most hunting activity took place during December, while the highest goose harvest per party was in January (Table 2). The average number of geese harvested per party was not impressive, but higher than average (1.11) for the ten years the Managed Goose Hunt was operational.

Sixty-five percent of the hunters hunted only once, while one hunter participated 21 times (Table 3). The mean number of trips per hunter has remained relatively constant during the operation of the hunt.

RECOMMENDATIONS

1. Back fill dirt, rip rap, and stabilize all reservoir pits as necessary. This requires NEPA and ESA documentation and coordination. Work should begin during the spring of 2012, prior to the high water period in the reservoir.

2. Mow or clear a path to each pit. This reduces the effort required to haul decoys and equipment and creates a path to each pit that is easy to follow in the dark prior to shooting hours.

3. Maintain annual pit maintenance.

4. Replace lower section of pit as needed.

Table 1. Blind use and waterfowl harvest for the Bump Sullivan Managed Goose Hunt, 2010-11.					
Blind Number	Number Of Hunters Using Blind[a]	Number of Days Occuppied	Canada Goose Harvest	Duck Harvest[b]	Light Goose Harvest
1	8	4	4	4	0
2	8	4	0	10	1
3	23	12	18	4	0
4	2	1	0	0	0
5	3	1	1	0	0
6	9	4	24	0	0
7	33	15	21	0	0
8	2	1	0	0	0
9	2	1	0	0	0
10	13	6	1	9	0
11	3	1	1	0	0
12	16	8	9	8	0
13	8	5	2	0	0
14	3	2	1	0	0
15	0	0	0	0	0
16	10	4	1	0	0
17	2	2	1	0	0
18	0	0	0	0	0
19	3	1	0	0	0
Total 10/11	148	72	84	35	1
01/02	318	154	140	7	0
00/01	332	151	155	0	1
99/00	499	230	212	58	0
98/99	578	271	322	22	1
97/98	763	350	288	2	
96/97	1056	459	529	7	
95/96	1277	567	766	2	
94/95	1226	535	758	6	
93/94	936	432	475	2	
[a]15 blinds in 1993-94, 16 blinds 1994-95 through 2001-02, 19 blinds in 2010-11.					
[b]All duck harvest not reported in early years of hunt.					

Table 2. Hunter use, Canada goose harvest, and light goose harvest by month for the Bump-Sullivan Managed Goose Hunt, 2010-11.					
	Hunting	Canada Geese	Light Geese	Ducks	Average # of Geese
Month	Parties	Harvested	Harvested	Harvested	Harvested/Hunting Party
November	17	27	1	30	1.65
(18 days)					
December	36	28	0	1	0.78
(31 days)					
January	15	28	0	4	1.87
(31 days)					
February	4	1	0	0	0.25
(7 days)					
Total 2010/11	72	84	1	35	1.18
2001/02	154	140	0	7	0.91
2000/01	151	155	0	0	1.03
1999/00	230	212	1	58	0.93
1998/99	271	322	1	22	1.19
1997/98	350	288			0.82
1996/97	459	529			1.15
1995/96	567	766			1.35
1994/95	535	758			1.42
1993/94	434	475			1.09
Geese retrieved by Bump-Sullivan public hunters appear as geese harvested.					

Table 3. Frequency with which 66 hunters participated in the Bump-Sullivan Managed Goose Hunt, 2010/11.																					
Number of Hunting Trips																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Number Of Hunters	43	7	7	3	2	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
Mean Number Of Trips Per Hunter						2010/11 - 1.1															
						2001/02 - 1.3															
						2000/01 - 1.1															
						1999/00 - 1.2															
						1998/99 - 1.1															
						1997/98 - 1.2															
						1996/97 - unk															
						1995/96 - 1.1															
						1994/95 - unk															
						1993/94 - unk															

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